

BASIC TACTICS (TOW), PART I

Subcourse Number IN0541

Edition C

UNITED STATES ARMY INFANTRY SCHOOL
FORT BENNING, GEORGIA 31905-5593

5 CREDIT HOURS

Edition Date: September 1995

SUBCOURSE OVERVIEW

This subcourse is designed to teach you to prepare and issue an operation order, a warning order, a fragmentary order, select a terrain route and direct a driver over the route, react to direct and indirect fire while mounted, use visual signaling techniques while mounted; select primary, alternate, and supplementary TOW weapon system positions; and conduct the occupation of a TOW firing position.

There are no prerequisites for this subcourse.

This subcourse reflects the doctrine that was current at the time it was prepared. In your own work situation, always refer to the latest publications.

The words "he," "him," "his," and "men," when used in this publication, represent both the masculine and feminine genders unless otherwise stated.

TERMINAL LEARNING OBJECTIVE

Action: You will be able to prepare and issue an operation order, a warning order, a fragmentary order, select a terrain route and direct a driver over the route, react to direct and indirect fire while mounted, use visual signaling techniques while mounted, select primary, alternate, and supplementary TOW weapon positions; and conduct the occupation of a TOW firing position.

Conditions: You will have access to information contained in this subcourse.

Standards: To demonstrate competency in this task you must achieve a minimum of 70 percent or higher on the subcourse examination.

TABLE OF CONTENTS

Lesson 1: Operation, Warning, and Fragmentary Orders

Part A: Prepare and Issue an Operation Order

Part B: Issue a Warning Order

Part C: Issue a Fragmentary Order.

Practice Exercise

Lesson 2: Select a Terrain Route, Direct a Driver Over the Route, Respond to Direct and Indirect Fire While Mounted, and Use Visual Signaling Techniques

Part A: Select a Terrain Route and Direct a Driver Over the Route

Part B: Use Visual Signaling Techniques While Mounted

Practice Exercise

Lesson 3: Select and Occupy TOW Firing Positions

Part A: Select Primary, Alternate, and Supplementary TOW Weapon Positions.

Part B: Conduct the Occupation of a TOW Firing Position

Practice Exercise

Lesson 1

OPERATION, WARNING, AND FRAGMENTARY ORDERS

OVERVIEW

Lesson Description:

In this lesson, you will learn to prepare and issue an operation order (TOW), a warning order, and a fragmentary order.

Terminal Learning Objective:

- Action:** Prepare and issue an operation order (TOW), a warning order, and a fragmentary order.
- Condition:** You will be given information contained in this lesson.
- Standard:** Identify the procedures for preparing an operation, warning, and fragmentary order.
- References:** The material contained in this lesson was derived from the following publications—
- [FM 7-91](#) 1987
[FM 23-34](#) 1994

INTRODUCTION

Your job as a TOW section leader is to train the members of your section to think and act as an effective team in combat. It is one of the most challenging jobs on the battlefield because, unlike other leaders, you lead men instead of units. You must train your squads/crews to operate effectively on a battlefield that is heavily oriented toward armor/antiarmor weapons systems with tremendous range and lethality. Because your section is at the cutting edge of our nation's Army, you have a most demanding role. You must prepare your section to fight and win on all types of terrain, from the desert to the arctic, and in all kinds of visibility and weather.

The individual soldier's ability and effectiveness are determined by how well he is trained and led. Even if all your men are good at their own tasks and in great physical shape, are expert infantrymen, and want to do a good job, they will not be an effective fighting force unless you can focus their efforts toward a single goal or mission. This requires teamwork. Building teamwork in a TOW section is a great opportunity, challenge, and responsibility.

The importance of your men's individual tasks and collective skills must be emphasized constantly. On the battlefield, you can expect to meet an enemy who is well armed with weapons that have greater range, accuracy, and killing power than those of past wars. These highly efficient weapons allow the enemy to HIT what he can see and KILL what he hits. But you can survive and accomplish your

mission if you reduce your unit's vulnerability by using cover, concealment, and suppression. You must learn to use cover and concealment to hide or disguise your positions or movement from the enemy's observation and suppression to force enemy gunners to be ineffective and inaccurate with their fires.

If you can use these three techniques and combine them with the all-important element of teamwork, success in training and in battle will follow.

For a successful mission, you must prepare and issue orders that have clarity, completeness, brevity, and the other characteristics of good orders. These orders must be prepared in accordance with the proper format. You must know what information to include to make your orders understood by your subordinates. This lesson will teach you how to prepare and issue operation orders, warning orders, and fragmentary orders. The three types of orders are the warning order, the operation order, and the fragmentary order. All three orders have the following characteristics and formats—

Clarity. Doctrinally established military terminology should be used to clearly convey identical meanings to all elements that receive the order.

Completeness. The order should contain all the required information and instructions to coordinate and execute the operation.

Brevity. Unnecessary detail should be avoided. Clarity and completeness must not be sacrificed in the interest of brevity.

Use of the Affirmative Form. In the interest of simplicity and clarity, the affirmative form of expression is used throughout orders.

Avoidance of Qualified Directives. Meaningless adverbs—for example, "attack vigorously"—and expressions that do not fix responsibility—for example, "try to hold"—must be avoided.

Authoritative Expressions. Avoid using vague language that indicates indecision and leads to uncertainty and lack of confidence by subordinates must be avoided. Direct and unmistakable terms that reflect intent and the will of the issuing commander are used.

Timeliness. Orders must allow subordinate leaders sufficient time for planning and preparation.

PART A

PREPARE AND ISSUE AN OPERATION ORDER

1. . Operation orders are either defensive or offensive. Each has certain characteristics, as listed in the following subparagraphs.

a. . A defensive order must contain the following—

- (1) Platoon mission.
- (2) Section mission.
- (3) Defensive position location.

- (4) Scheme of maneuver.
- (5) Type of emplacements and work priority.
- (6) Local security plan.
- (7) Critical signal instructions.
- (8) Location of the section leader's position and company command posts.

b. . An offensive order must contain—

- (1) Platoon mission.
- (2) Section mission.
- (3) Concept of how the battle will be fought, to include—
 - (a) Location of the objective.
 - (b) Time of attack.
 - (c) Location of the line of departure or the line of contact.
 - (d) Order and route of march.
 - (e) Consolidation instructions.
 - (f) Location of overwatch positions.
- (4) Critical signal instructions.

c. . An operation order (OPORD) gives subordinates the essential information needed to carry out an operation. This includes the situation, the mission, the assignment of subunit tasks and purposes, combat service support, and command and signal information. [Figures 1-1 through 1-5](#) show the operation order format.

1. **SITUATION:** Provides information essential to the subordinate leader's understanding of the situation.

a. **ENEMY FORCES:** Refer to the overlay or sketch. Include pertinent intelligence provided by higher HQ and other facts and assumptions about the enemy. This analysis is stated as conclusion and address—

- (1) Disposition, composition, and strength.
- (2) Capabilities. A listing of what the enemy is able to do and how well.
- (3) Most probable course of action.

b. **FRIENDLY FORCES:** Provides information that subordinates need to accomplish their task.

- (1) Higher units. A verbatim statement of the higher commander's mission statement from paragraph 2 and concept of the operation statement from paragraph 3a.
- (2) Left unit's mission.
- (3) Right unit's mission.
- (4) Forward unit's mission.
- (5) Mission of the unit in reserve or following.
- (6) Units in support or reinforcing the higher unit.

c. **ATTACHMENTS and DETACHMENTS:** When not shown under Task Organization, list here or in an annex, units attached or detached from the platoon, together with the effective times.

2. **MISSION:** Provide a clear concise statement of the task to be accomplished and the purpose for doing it (WHO, WHAT, WHEN, WHERE, AND WHY). The leader derives the mission from the mission analysis.

Figure 1-1. Operation Order Format.

3. EXECUTION:

Intent. Give the stated vision that defines the purpose of the operation and the relationship among the forces, the enemy, and the terrain.

a. **CONCEPT of the OPERATION.** Refer to the operation overlay and concept sketch. Explain, in general terms, how the platoon, as a whole, will accomplish the mission. Identify the most important task for the platoon (mission-essential task) and any other essential task. If applicable, designate the decisive point, form of maneuver or defensive techniques, and any other significant factors or principle. Limit this paragraph to six sentences.

- (1) **Maneuver.** Address all squads and attachments by name, giving each of them an essential task. Designate the platoon's main effort; that is, who will accomplish the most important task. All other tasks must relate to the main effort. Give mission statements for each subordinate element.
- (2) **Fires.** Refer to the fire support overlay and target list. Describe the concept of fire support to synchronize and complement the scheme of maneuver. If applicable, address priority targets (who controls fires on them), and any restrictive control measure on the use of fires.
- (3) **Additional combat support assets (engineer, ADA).** State the concept of employment of any combat support attachments or who gets priority of their use, how they are to be used (priority of effort), and how they will be controlled and by whom. (Do not include information that belongs in the Coordinating Instructions subparagraph.)

Figure 1-2. Operation Order Format (Continued).

b. **TASK.** To maneuver units. Specify tasks, other than those listed in paragraph 3a (1), and the purpose of each, for squads and attachments. List each in separate numbered subparagraphs. Address the reserve last. State any priority of sequence.

c. **TASK TO COMBAT SUPPORT UNITS.** A platoon may receive an attachment of CS units; for example, an engineer squad. List tasks to CS units in subparagraphs in the order they appear in the task organization. List only those specific task that must be accomplished by these units not specified elsewhere.

d. **COORDINATING INSTRUCTIONS.** List the details of coordination and control applicable to two or more units in the platoon. Items that may be addressed include—

- (1) Priority intelligence requirements, intelligence requirements and reporting task.
- (2) Mission-oriented protective posture level.
- (3) Troop safety and operational exposure guidance
- (4) Engagement and disengagement criteria and instructions.
- (5) Fire distribution and control measures.
- (6) Consolidation and reorganization instructions (other than SOP items).
- (7) Reporting requirements; for example, crossing Pls or check points.
- (8) Terrorism and counterterrorism instructions.
- (9) Prove position.
- (10) Specified tasks that pertain to more than one squad or element. Rules of engagement.
- (11) Order of march and other movement instructions (consider an annex).

Figure 1-3. Operation Order Format (Continued)

4. SERVICE SUPPORT: Include CSS instructions and arrangements supporting the operations that are of priority interest to the platoon. Include changes to established SOPs or a previously issued order. Paragraph 4 is often prepared and issued by the PSG.

a. **GENERAL:** Reference the SOPs that govern the sustainment operations of the unit. Provide current and proposed company trains locations, casualty collection points, and routes to and from them.

b. **MATERIAL AND SERVICES:**

- (1) **Supply.** Include information on all classes of supply of interest to the platoon. When applicable, list constraints and limitations, specific operating hours, distribution methods or schedules and other information which alters the standard manner in which supplies are managed, controlled, handled, or distributed.
- (2) **Transportation.** Provide route limitations and traffic priorities by units, and schedule for service.
- (3) **Services.** Include information or instructions that prescribe the type of service available, designation and location of the facility and schedule for service.
- (4) **Maintenance.** Include any information that differs from the established SOP on maintenance of weapons and equipment.
- (5) **Medical Evacuation.** Identify procedures for evacuation of wounded if they differ from the SOP.

Figure 1-4. Operation Order Format (Continued)

c. **PERSONNEL.** Identify the EPW collection point and any additional instructions on EPW handling not covered in the SOP.

d. **MISCELLANEOUS.** Include instruction for the destruction of supplies and any other information not covered elsewhere.

5. COMMAND AND SIGNAL:

a. Command.

- (1) Location of the higher unit commander CP.
- (2) Location of the platoon leader or CP.
- (3) Location of the PSG or alternate CP.
- (4) Succession of command (if different from the SOP).

b. Signal.

- (1) SOI index in effect.
- (2) Listening silence, if applicable.
- (3) Method of communication in priority.
- (4) Emergency signals, visual signals.
- (5) Code words.

Figure 1-5. Operation Order Format (Continued)

2. .

a. The most important part of receiving an order is clear understanding of what your unit has to accomplish in relation to the ground and to the other platoons or squads. Unless you know exactly what to do, what the other units are doing, and where and when these actions are to be done, your chances of success are greatly reduced. After hearing the entire order, do not leave until all your questions have been answered.

b. Upon receiving the order and understanding the leader's plan, review your notes and answer the following questions—

- (1) What mission did I receive?
- (2) How much do I know about the enemy?
- (3) How does the terrain and weather influence the operation?
- (4) What supplies or equipment do I need?
- (5) Do I need to assign a special task to anyone?

3. .

a. In analyzing your mission, identify what your unit is to accomplish. Be sure that you know how much time you have to prepare. Be aware of any restrictions or special tasks that apply to your section.

b. Establish a time schedule for your preparation. You will be told what time the operation is to begin and what time your unit must be ready to go. This allows you to allocate time to prepare for the mission. Identify the things that must be done to get ready and, working backward from "ready" time, allow your men time to accomplish each task. This technique is called reverse planning. Here is how reverse planning might work for a section leader—

- (1) 1420: Commander said to be ready.
- (2) 1415: Inspect assembly area.
- (3) 1400: Inspect squad.
- (4) 1315: Issue order to the squad leader.
- (5) 1300: Finalize section order.
- (6) 1200: Reconnoiter with commander/receive order.
- (7) 1100: Issue warning order to section.
- (8) 1040: Receive warning order.

4. .

- a. Develop a clear idea of where the enemy is, what his strength is, and what kind of weapons and equipment he has. Tell your men how best to destroy or suppress the kind of enemy whom you are likely to meet.
- b. The enemy in a certain area sometimes uses the same pattern of operation repeatedly. For example, if you know that the enemy always ambushes in the vicinity of trail junctions, ensure that all your men know it.

5. .

a. Decisions pertaining to route, objective, sectors of fire, movement techniques, and so on. Are made by the commander. The section leader must study the terrain thoroughly if he is to properly use his men and equipment to gain an advantage over the enemy. Proper use of terrain will—

- (1) Provide cover and concealment before, during, and after the battle.
- (2) Increase the effectiveness of your fire.
- (3) Decrease the effectiveness of the enemy's weapons.

b. Weather can affect the men; cold, heat, rain, or snow can create problems if your section is not prepared.

6. . Plan supplies, equipment, and special tasks with emphasis on—

- a. Resupply of ammunition.
- b. Resupply routes.

- c. Coordination for resupply of batteries (if applicable).

7. .

- a. An operation order contains the information and instructions needed to accomplish a specific mission. The amount of information included in your order depends upon the information that you received and the time available to prepare the order (and prepare for the operation).
- b. Below is an example of how you can organize your order to ensure that you tell your squad leaders everything that they need to know to perform the mission that you were given. The purpose of this format is to help you prepare your order. Use it as a checklist and remember that it is a guide. Give the order in language that the squad leaders can understand. For example, you may prefer to say, "Here's how we are going to get the job done," rather than "Execution."
 - (1) . Information on enemy and friendly forces, to include the mission and intended actions of at least the next higher headquarters and the units on your left and right.
 - (2) . What each section is to accomplish.
 - (3) . The tactical plan for accomplishing the mission. For example:
 - (a) Plan and control TOW section fire (defense).
 - (b) General location of firing positions (primary, alternate, supplementary positions) (offense).
 - (c) Overwatch positions (offense).
 - (d) Tasks (missions) of each squad (the platoon order) or of teams and individuals (the squad order).
 - (4) . Administrative information to include plans for ammunition and ration resupply, and casualty evacuation.
 - (5) .
 - (a) Where you will be during the operation and where the next higher leader will be.
 - (b) Signals and other control measures to be used during the operation.

8. .

- a. After you have received an operation order, thought it through and prepared your own order, you must issue that order. The commander should issue his orders from a position that allows the section leaders to see the ground on which they are going to operate.
- b. Section leaders should try to issue their orders from vantage points that overlook the terrain. However, often this will not be possible, and they will have to sketch the terrain on the ground. Terrain models are easy to build, and they allow the leader to relate his order with terrain features so that each man will know what to expect.

PART B

ISSUE A WARNING ORDER

1. .

a. Warning orders give subordinate units notice of a contemplated action or order which is to follow. The purpose of the warning order, is to initiate the troop-leading procedure in subordinate units. Warning orders have no prescribed format. The platoon leader issues his warning order to the squad leaders, platoon sergeant, and forward observer. Each squad leader issues his warning order to his entire squad. The amount of detail included in a warning order depends on the time available, the means of communication, and the information necessary for subordinate leaders. However, the warning order should cover at least the following—

- (1) The mission, which should be a clear, concise statement of the task to be accomplished by the squad or the platoon.
- (2) The time that the operation or action is to take place.
- (3) Any specific instructions or special equipment and material required for the mission.
- (4) The time and place for issuance of the complete order and who is to attend.

b. Warning orders are brief written or oral orders. [Figure 1-6](#) shows a sample warning order format.

1. **SITUATION:** Brief description of the enemy and friendly situation. Point out key locations on the ground, map or sketch. Attachments to the squad/platoon.

2. **MISSION:** Concise statement of the task and purpose (who, what, when, where, and why). If not all information is known, state which parts of the mission statement are tentative.

3. **EXECUTION:** Brief statement of the tentative concept of the operation.

4. **SERVICE SUPPORT:** Combat service support tasks to be accomplished that are different from the Tactical SOP.

5. **COMMAND AND SIGNAL:** Location of CP succession of command (if not SOP). SOI in effect. Signals/code words.

Figure 1-6. Example of Warning Order Format.

2. . The following is a sample platoon warning order and a subsequent squad warning order—
 - a. . Our mission is to attack the town of Hicks at 1830. The enemy has some good positions in the buildings. There may also be enemy tanks in the town. Draw six grenades for each man and one light antitank weapon (LAW) for each man. Each squad will carry 10 blocks of C4, 10 nonelectric blasting caps, 10 fuse lighters, 100 feet of detonating cord, and 10 feet of fuse. The platoon sergeant will tell you where and when you can pick it up. Let me know by 1330 if you have any problems with radios and weapons. Meet me back here at 1405. At that time, we will move up to the ridge, overlooking the town, where I will give the complete order.
 - b. . Our mission is to attack the town of Hicks at 1830 as part of the platoon. The enemy has well-prepared positions in the buildings and probably has tanks with him. Each man will carry six grenades and one LAW in addition to the standard load for rifles and grenade launchers. Sergeant Evans, your team will handle our demolitions: Draw 10 blocks of C4, 10 nonelectric blasting caps, 10 fuse ignitors, 100 feet of detonating cord, and 10 feet of fuse. Make sure you testburn the fuse. Private Smith, carry a climbing rope and a grappling hook. The platoon sergeant will be here in 20 minutes to tell us where and when we can pick up our ammunition and equipment. I'm leaving now to get the platoon order. Sergeant Jones is in charge until I get back. We will meet here at 1515 for the OPORD.

PART C

ISSUE A FRAGMENTARY ORDER

1. . Fragmentary orders (FRAGOs) provide pertinent extracts from a more detailed order. They provide instructions, as they are developed, before the complete order has been issued; they provide specific instructions to leaders who do not need the complete order; and, more often, they provide timely changes to existing orders. Fragmentary orders do not have a specific format. However, to ensure understanding, the fragmentary order should follow the basic format of the operation order. Information unchanged from the operation order is omitted in a follow-up fragmentary order, as is nonessential or incomplete information.
2. .
 - a. A FRAGO provides brief, specific, and timely instructions without loss of clarity. FRAGOs contain changes or information of immediate concern. These orders may be written or oral. The FRAGO is issued to change an order that already has been issued.
 - b. Only those items that are changed from the original order should be included in the FRAGO as long as clarity is not sacrificed.
 - c. The words "no change" may be used to omit elements of the original OPORD that have not changed.
 - d. There is no standard format for a FRAGO, but all changes should be presented in the same sequence as in the OPORD.

e. When possible, the FRAGO should be issued to all personnel concerned at a central location. When that is not possible, the FRAGO may be issued by radio, telephone, or messenger. Regardless of how it is issued, all changes to the mission caused by the FRAGO must be understood by all who received the original order.

3. .

a. : The enemy is reinforcing his defensive positions. The timetable for the attack has been moved forward 30 minutes.

b. : No change.

c. : (YOUR) Antiarmor platoon will notify the Company/Team Commander when the last element clears stationary unit from the Phase line HIT to occupy Battle position one (BP1), BP2, BP3, and BP4 to support the attack.

d. : No change.

e. : No change.

4. . The overlay is a graphic representation of the leader's scheme of maneuver and concept. It ensures coordinated action among all units. The fewest possible control measures are used so as not to clutter or confuse the overlay. However, the overlay must have enough control measures to allow flexibility when issuing changes to the operation order or the fragmentary order. If control measures or symbols other than those specified in [FM 101-5-1](#) are used, a legend should be placed on the overlay to define the graphic.

Practice Exercise

Lesson 1

Instructions The following items will test your understanding of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers with the answer key that follows. If you answer any item incorrectly, review that part of the lesson which contains the portion involved.

Situation for Questions 1 through 3:

You are preparing an oral operation order for an offensive mission. You will issue the order later in the day. You are reviewing the order to ensure that it has all the characteristics of a good order.

1. You ensure that you have used doctrinally established military terminology in order to convey identical meanings to all elements that receive the order. In other words, you ensure that your order has—
 - ☐ A. clarity.
 - ☐ B. completeness.
 - ☐ C. use of the affirmative form.
 - ☐ D. authoritative examples.
2. You ensure that your order contains the platoon mission, the section mission, the concept of how the battle will be fought, and critical signal instructions. In which part of the order do you include information about the order and route of the march?
 - ☐ A. Platoon mission.
 - ☐ B. Section mission.
 - ☐ C. Concept of how the battle will be fought.
 - ☐ D. Critical signal instructions.
3. You ensure that, for simplicity and ease of understanding, you express the mission as—
 - ☐ A. when, where, and how.
 - ☐ B. who, what, and how.
 - ☐ C. who, how many, and how much.
 - ☐ D. who, what, when, where, and why.

Situation for Question 4:

You are a TOW squad leader. You have received an operation order.

4. You recognize that the most important part of receiving an order is clear understanding of what your unit has to do in relation to—
- ☐ A. the ground and to the other squads.
 - ☐ B. anticipated enemy offenses.
 - ☐ C. safeguarding routes into, out of, and between TOW firing positions.
 - ☐ D. the supply needs of your unit.

Situation for Question 5:

You are issuing an operation order. It is impossible to issue the order from a vantage point overlooking the terrain.

5. To relate your order with terrain features, you use which of the following?
- ☐ A. Map of terrain.
 - ☐ B. Photographs of the terrain, taken during aerial reconnaissance.
 - ☐ C. Terrain model.
 - ☐ D. Graphic overlay.

PRACTICE EXERCISE ANSWERS

Situation for Questions 1 through 3:

You are preparing an oral operation order for an offensive mission. You will issue the order later in the day. You are reviewing the order to ensure that it has all the characteristics of a good order.

1. You ensure that you have used doctrinally established military terminology in order to convey identical meanings to all elements that receive the order. In other words, you ensure that your order has —

a. clarity.

b. completeness.

c. use of the affirmative form.

d. authoritative examples.

2. You ensure that your order contains the platoon mission, the section mission, the concept of how the battle will be fought, and critical signal instructions. In which part of the order do you include information about the order and route of the march?

a. Platoon mission.

b. Section mission.

c. Concept of how the battle will be fought.

d. Critical signal instructions.

3. You ensure that, for simplicity and ease of understanding, you express the mission as—

a. when, where, and how.

b. who, what, and how.

c. who, how many, and how much.

d. who, what, when, where, and why.

Situation for Question 4:

You are a TOW squad leader. You have received an operation order.

4. You recognize that the most important part of receiving an order is clear understanding of what your unit has to do in relation to—

a. the ground and to the other squads.

b. anticipated enemy offenses.

c. safeguarding routes into, out of, and between TOW firing positions.

d. the supply needs of your unit.

Situation for Question 5:

You are issuing an operation order. It is impossible to issue the order from a vantage point overlooking the terrain.

5. To relate your order with terrain features, you use which of the following?
- a. Map of terrain.
 - b. Photographs of the terrain, taken during aerial reconnaissance.
 - c. [Terrain model.](#)
 - d. Graphic overlay.

Lesson 2

SELECT A TERRAIN ROUTE, DIRECT A DRIVER OVER THE ROUTE, RESPOND TO DIRECT AND INDIRECT FIRE WHILE MOUNTED, AND USE VISUAL SIGNALING TECHNIQUES

OVERVIEW

Lesson Description:

In this lesson, you will learn to select a terrain route and direct a driver over the route, react to direct and indirect fire while mounted, and use visual signaling techniques while mounted.

Terminal Learning Objective:

- Action:** Select a terrain route and direct a driver over the route, react to direct and indirect fire while mounted, and use visual signaling techniques while mounted.
- Condition:** You will be given information contained in this lesson.
- Standard:** Identify the procedures for selecting a terrain route and directing a driver over the route, reacting to direct and indirect fire while mounted, and using visual signaling techniques while mounted.
- References:** The material contained in this lesson was derived from the following publications:
- [FM 7-91](#) 1987
 - [FM 23-34](#) 1994
 - [FM 21-60](#) 1987

INTRODUCTION

To select a terrain route, you must consider the cover and concealment that terrain features provide. To direct a driver over the route, you must use terrain-driving rules, know how to react to direct and indirect fire while mounted, and know how to control vehicles with arm-and-hand signals. This lesson provides instruction in each of these areas.

PART A

SELECT A TERRAIN ROUTE AND DIRECT A DRIVER OVER THE ROUTE

1. . In selecting a terrain route, the vehicle commander should give the driver clear, specific instructions as to the route that affords the best use of available cover and concealment. [Figure 2-1](#)

shows a route that takes advantage of the natural cover provided by terrain features (ridges) to conceal a vehicle from suspected enemy positions as the vehicle moves along its route.

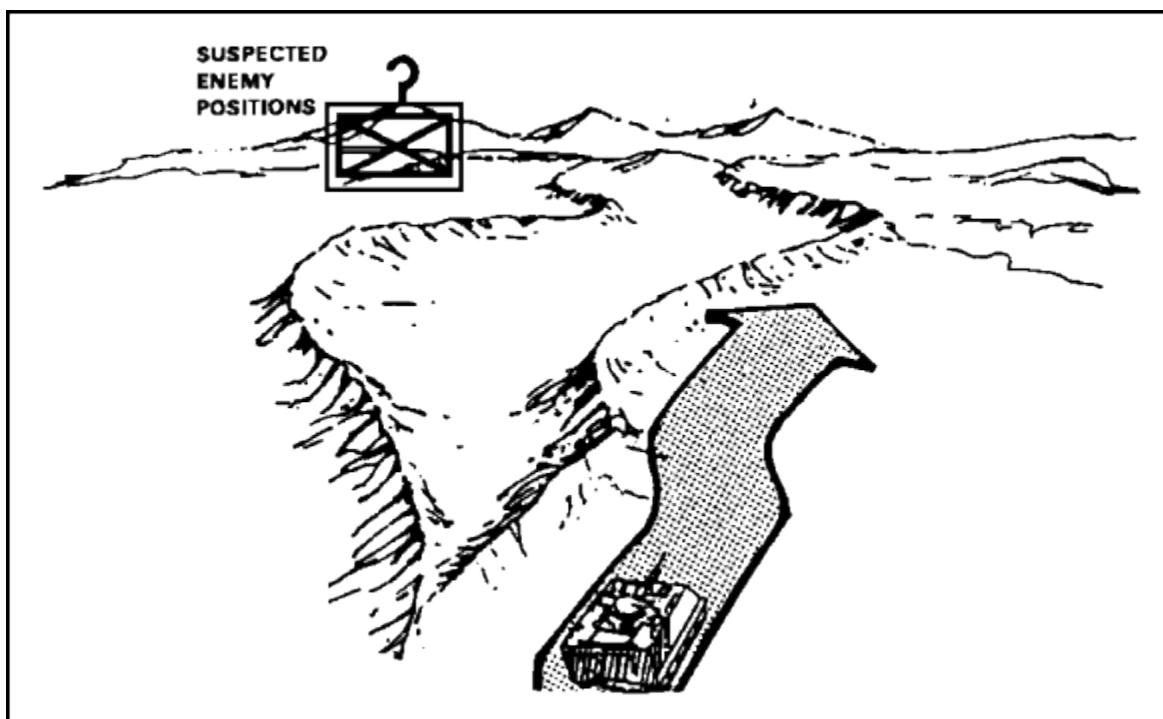


Figure 2-1. Route Cover and Concealment.

2. . Follow these terrain-driving rules to reduce exposure to effective enemy fire and detection—

- a. Never skyline or move directly forward from a defilade position, as shown in [Figure 2-2](#).



Figure 2-2. Movement from Defilade Position.

- b. Avoid dusty terrain when possible, as shown in [Figure 2-3](#), since it betrays the movement of armored vehicles.



Figure 2-3. Selecting Terrain to Avoid Dust Signatures.

- c. Use all available cover and concealment.
- d. Leave the terrain looking as natural as possible to hinder tracking by the enemy, as shown in [Figure 2-4](#).

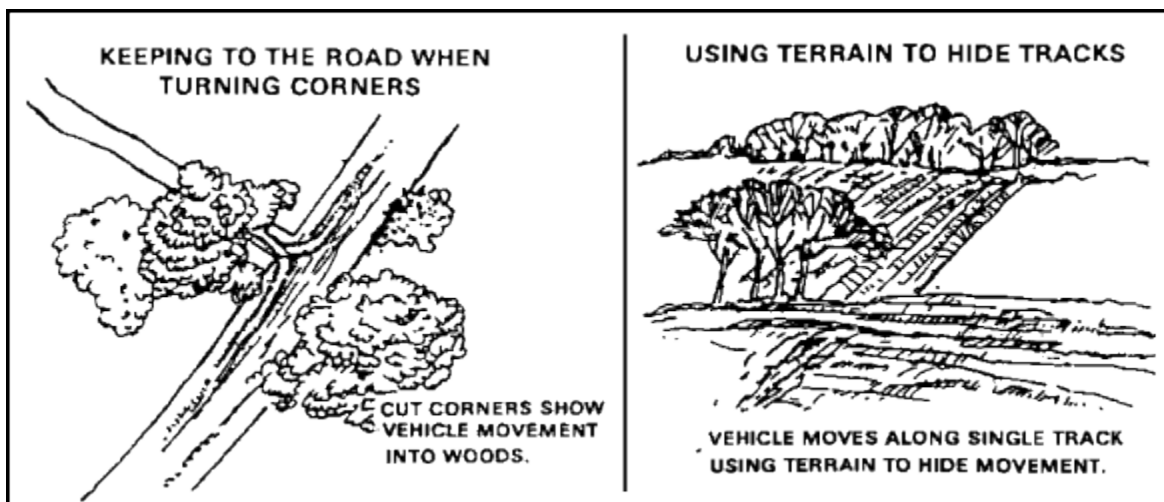


Figure 2-4. Using Terrain to Hide Tracks.

- e. If you must cross an open area (as in emerging from a woodline, crossing a ridge, and so on.), check it first for possible enemy positions and then cross it quickly, as shown in [Figure 2-5](#). If enemy locations are identified or suspected, suppress or smoke them before crossing the open area. Cross the open area rapidly from covered position to covered position.

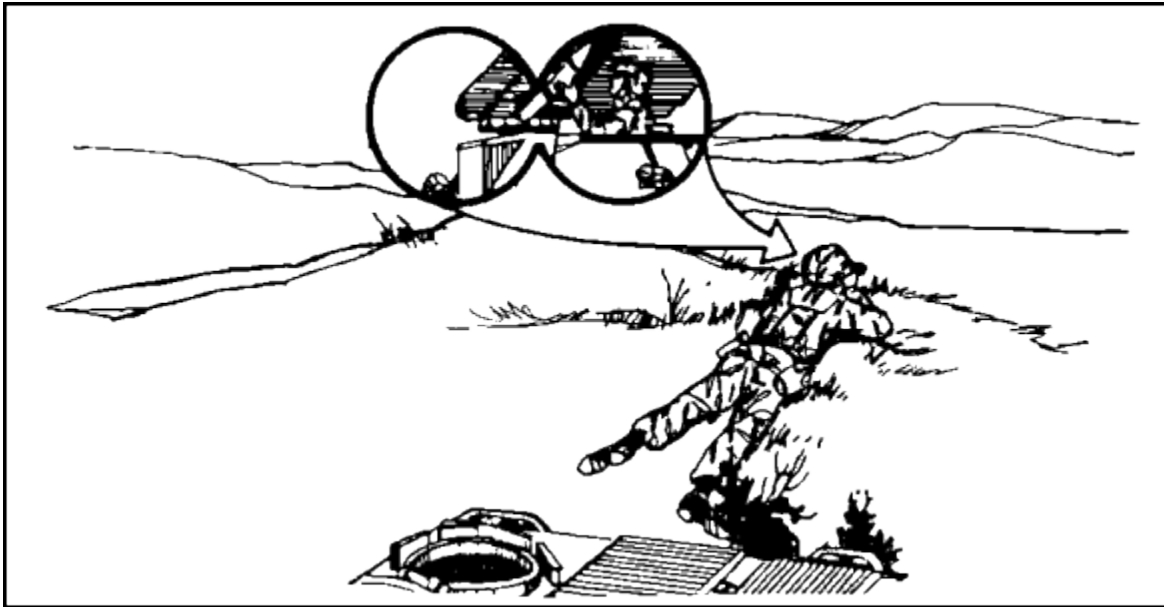


Figure 2-5. Planning to Cross Open Areas.

f. Where covered or concealed routes are not available or when their use would be time-consuming, plan routes that have "escape valves" available. For example, [Figure 2-6](#) shows dense tree lines providing protection from Saggars.

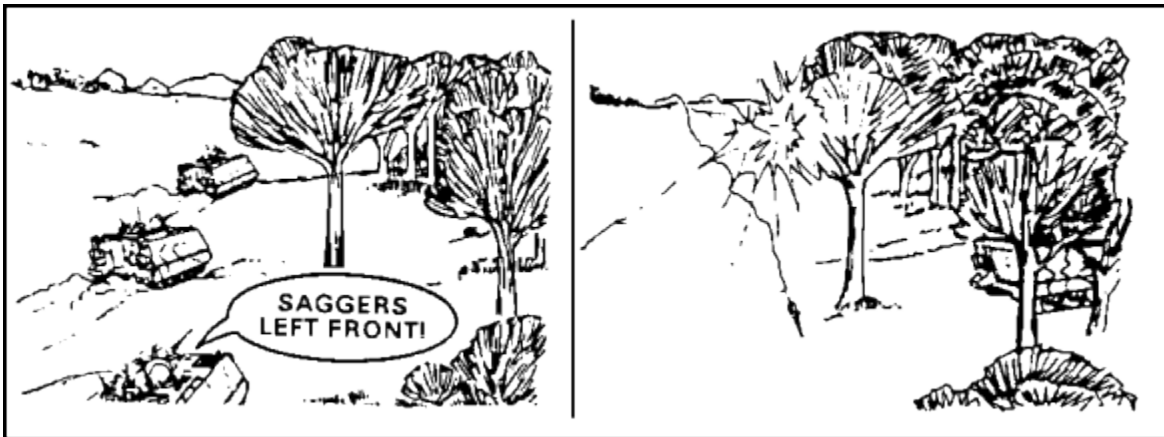


Figure 2-6. Escape Valves.

3. . Use the following guidelines to react to direct or indirect fire while mounted:

a. Immediately return fire with all weapons, as shown in [Figure 2-7](#). This is critical when you are hit by direct fire. The machine gun mounted on the vehicle is the best weapon to suppress the enemy's fire, but the added firepower of other weapons must be considered. If there is no machine gun, all available squad members should return fire. Massive response is crucial before you can take action.

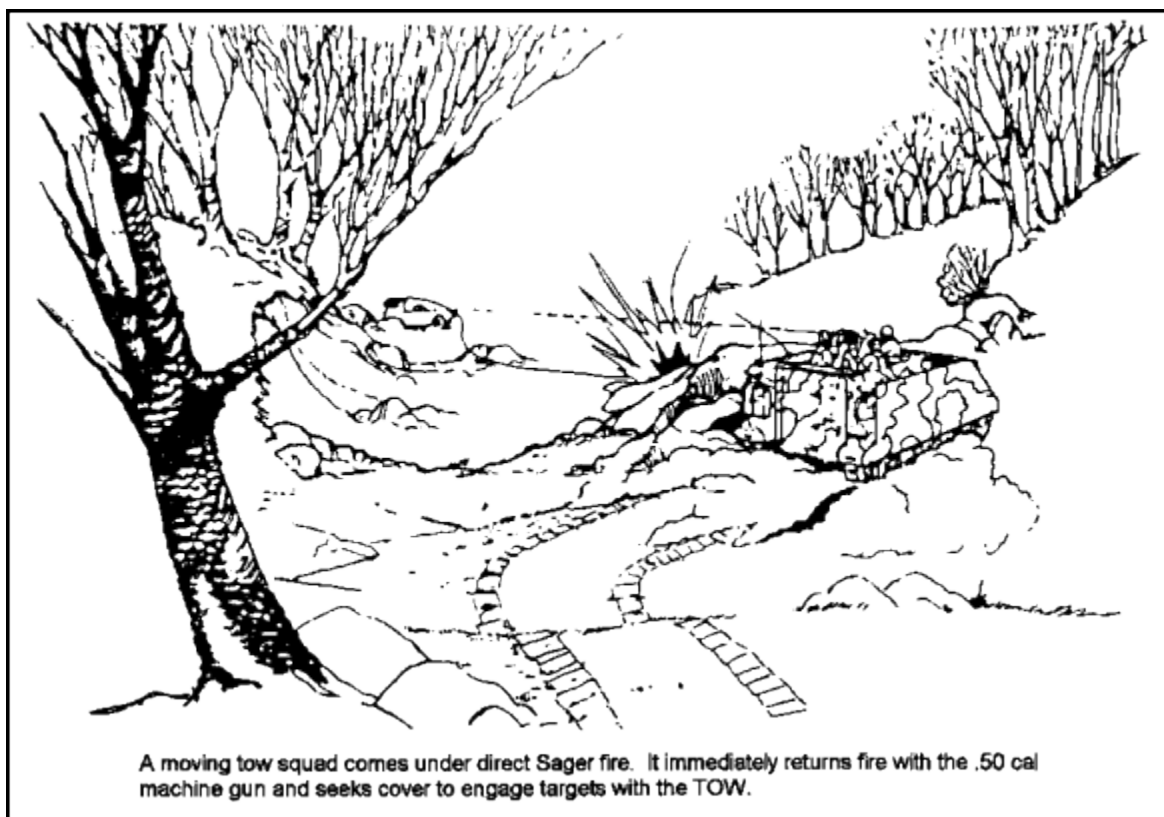


Figure 2-7. Mounted TOW Squad Reacting to Enemy Fire.

- b. Move to cover as you begin suppressive fire. Take advantage of the terrain during the movement. If you do, this task will not be so difficult.
- c. Upon receiving fire, call the section leader and tell him of the situation. He can develop the situation or provide you with the needed support if you are pinned down or in contact with a force that you cannot handle.
- d. As squad leader, always maintain control of your vehicle by moving into the cupola and observing through vision blocks. Ensure that all track hatches are closed, and move rapidly through the impact area.
- e. Establish an SOP and practice it while training.

Part B

USE VISUAL SIGNALING TECHNIQUES WHILE MOUNTED

1. .

- a. Visual communication is a means available to all units. Visual signals are transmitted by the following—
 - (1) .
 - (2) .

- (3) .
- (4) .
- (5) .
- (6) .

- b. Visual signals are suitable for transmitting prearranged messages rapidly over short distances as well as for the recognition and identification of friendly forces.
- c. Visual signals also make it easier to control the action or movement of the follower. Conversely, visual signals can influence the actions or the movement of the leader.
- d. You must know all the visual signals that can assist you in performing your specific job effectively if no other means of communication are available.

2. . Signals for combat formations and battle drill may be used, as appropriate, by either mounted or dismounted troops. They give the soldier a means of communication between himself and other persons or units. They must be practiced until their use becomes second nature. Signals must be given correctly and clearly.

- a. . When movement or action is to be executed by less than the total unit, the signaler will point, if necessary, toward the person(s) or element(s) of a unit as a warning that a signal will follow.
- b. . When a unit or an action is to be executed by the entire unit, the proper signal should be preceded by the signal ATTENTION. Most signals may be given from the ground or from a vehicle.

NOTE

[Figures 2-8 through 2-32](#) illustrate the various signals discussed in the following paragraphs. Unless otherwise indicated in the figures, the signaler faces the person(s) or element(s) for which the signal is intended.

3. . Arm-and-hand signals, tactical signals, and platoon movement formation signals are discussed in the following subparagraphs.

- a. . Listed below are selected standard arm-and-hand signals that you should know to control vehicles.

NOTE

A total of 22 arm-and-hand signals are illustrated in [Figures 2-8 through 2-29](#). The signals are identified (in the subparagraphs in which they are discussed) by successive letters of the alphabet. For example, the first signal discussed (the START ENGINES or PREPARE TO MOVE signal) is identified by the letter "A" in [Figure 2-8](#). The next signal (the STOP ENGINES signal) is identified by the letter "B," in [Figure 2-9](#), and so forth, with the twenty-second signal (the I DO NOT UNDERSTAND signal) being identified by the twenty-second letter of the alphabet, "V."

(1) . To signal START ENGINES or PREPARE TO MOVE, simulate the cranking of engines by moving the arm in a circular motion at waist level.

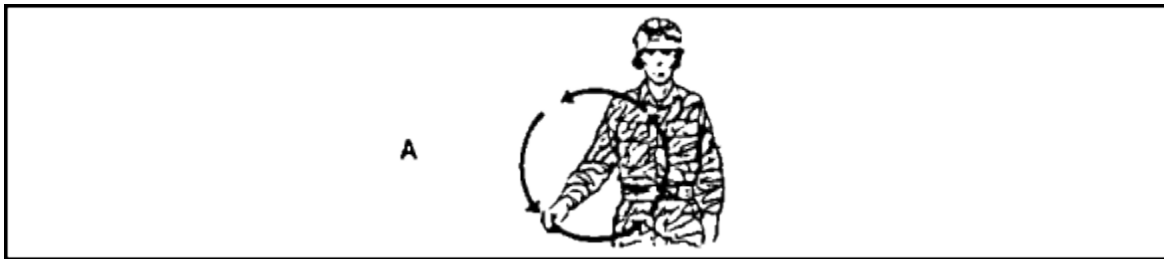


Figure 2-8. START ENGINES or PREPARE TO MOVE signal.

(2) . To signal STOP ENGINES, draw your right hand, palm down, across your neck in a "throat cutting" motion, from left to right.

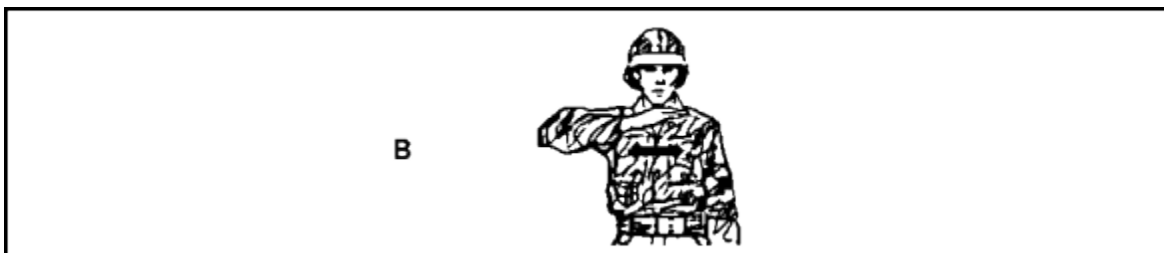


Figure 2-9. STOP ENGINES signal.

(3) . To signal MOUNT, with the hand extended downward at your side and the palm 45-degrees out, raise your arm sideward and upward to an angle of 45-degrees above the horizontal. You may use both arms when giving this signal. Repeat the signal until it is understood.

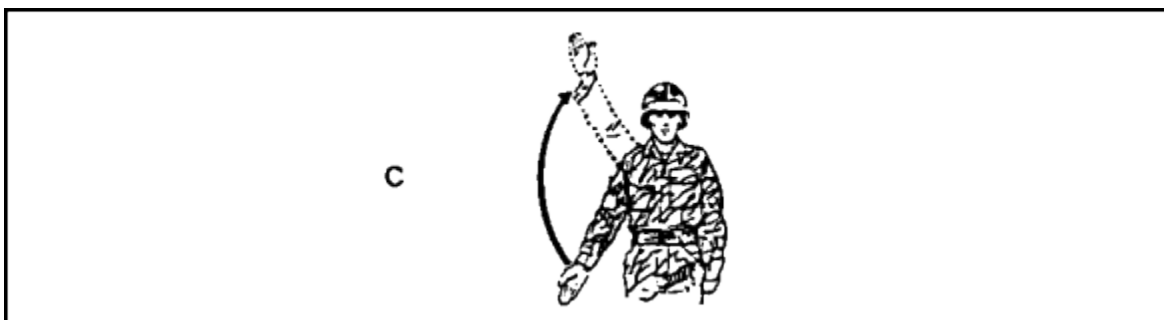


Figure 2-10. MOUNT signal.

(4) . To signal DISMOUNT or TAKE A PRONE POSITION, extend your arm sideward at an angle 45 degrees above the horizontal, with your palm down, and lower it to your side. You may use both arms in giving this signal. Repeat the signal until it is understood.

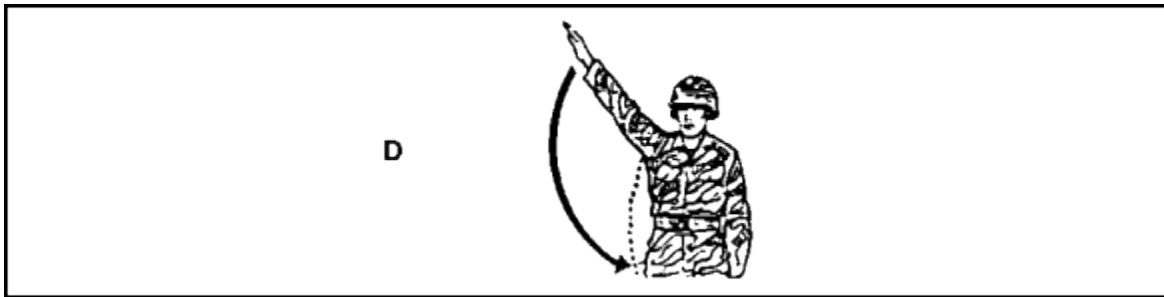


Figure 2-11. DISMOUNT or TAKE A PRONE POSITION signal.

(5) . To signal MOVE the vehicles FORWARD or COME FORWARD, move your hand(s) backward and forward with your palm(s) toward your chest, as if you were pulling the vehicle.

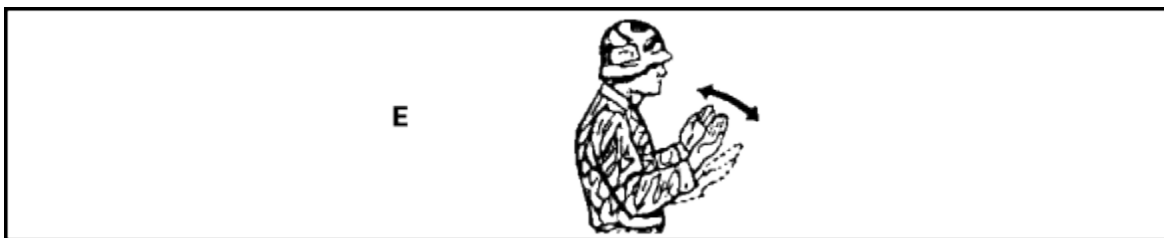


Figure 2-12. FORWARD or COME FORWARD signal.

(6) . To signal NEUTRAL STEER (tracked vehicles), cross your wrists at your throat. Point your index finger in the direction to steer, and clench the fist of your other hand.



Figure 2-13. NEUTRAL STEER signal.

(7) . To signal MOVE IN REVERSE (backup), face the unit (vehicle) that you are signaling. Raise your hands to your shoulder, level palms to the front. Move your hands forward and backward as if you were pushing the vehicle away.

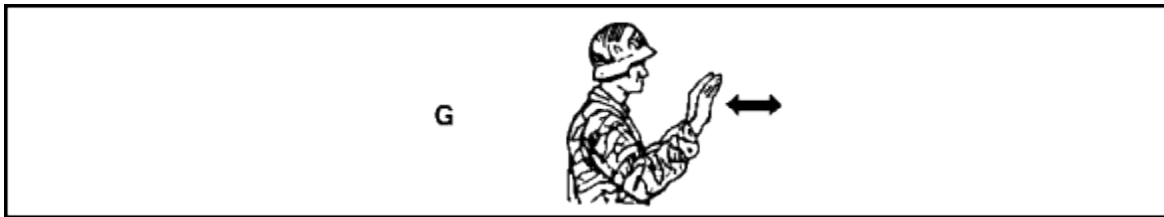


Figure 2-14. MOVE IN REVERSE signal.

(8) . To signal CHANGE DIRECTION, raise your hands to shoulder level in front of your body. On the arm in which the direction of the turn is to be made, form a clenched fist. Make a beckoning motion with your other arm to bring the vehicle forward. To reverse, make a pushing motion.



Figure 2-15. CHANGE DIRECTION signal.

(9) . To signal BUTTON UP, place both hands, one on top of the other, palms down, on top of your helmet, with both arms back and in the same plane as the body. To signal UNBUTTON, give the BUTTON UP signal. Then separate the hands, moving them slightly to each side in a slicing motion. Repeat the signal until it is understood.

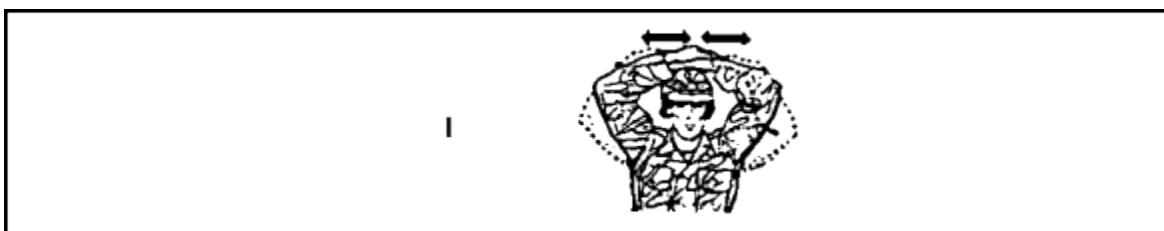


Figure 2-16. BUTTON UP or UNBUTTON signal.

(10) . To signal CLOSE UP DISTANCE BETWEEN VEHICLES AND STOP, face the vehicle being signaled, and extend your forearms to the front with your palms inward and separated by at least the width of the shoulders. Bring your palms together as the distance shortens. The vehicle must stop when your palms come together.



Figure 2-17. CLOSE UP DISTANCE BETWEEN VEHICLES and STOP signal.

(11) . This is an alternate signal used to stop tracked vehicles. To signal STOP, clasp your hands together, palm to palm, at chin level.

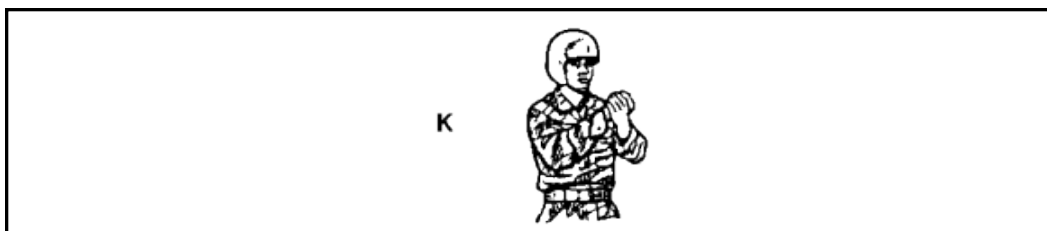


Figure 2-18. STOP signal.

(12) . This signal is used for vehicles with ramps. To signal RAISE RAMP, make a circular motion with either hand at head level while your other arm is extended across your body.

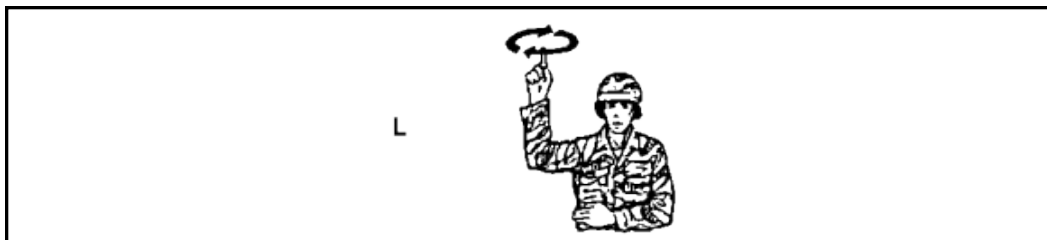


Figure 2-19. RAISE RAMP signal.

(13) . To signal LIGHTS OFF, point the index finger of your right hand toward your right eye and give a "thumbs down" signal with your left hand.

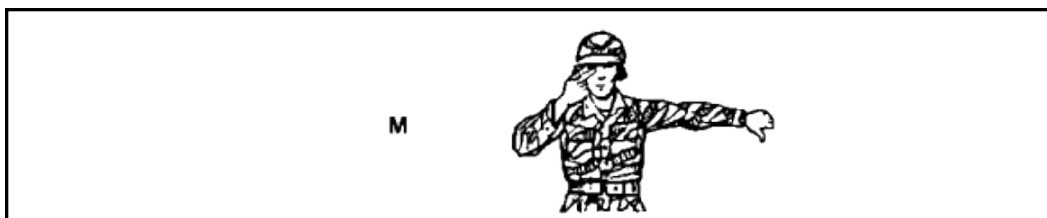


Figure 2-20. LIGHTS OFF signal.

(14) . To signal LIGHTS ON, point toward your eyes with the index fingers of both hands.

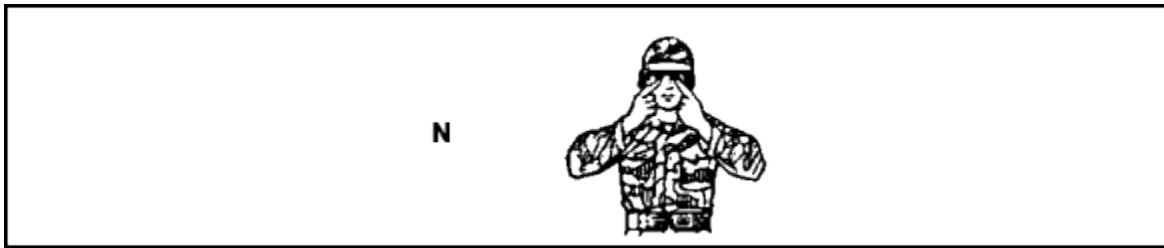


Figure 2-21. LIGHTS ON signal.

(15) . This signal is used for vehicles with ramps. To signal LOWER RAMP, make a circular motion with either hand pointing to the ground.



Figure 2-22. LOWER RAMP signal.

(16) . To signal LEFT TURN or COLUMN LEFT, extend your left arm horizontally to your side with your palm to the front.

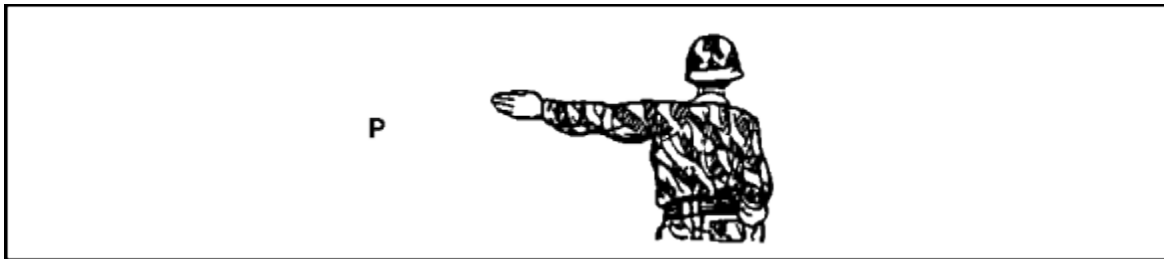


Figure 2-23. LEFT TURN or COLUMN LEFT signal.

(17) . To signal PASS AND KEEP GOING, extend your left arm horizontally to the side, with your palm to the front, and describe large circles to the front by rotating your arm clockwise from the elbow.

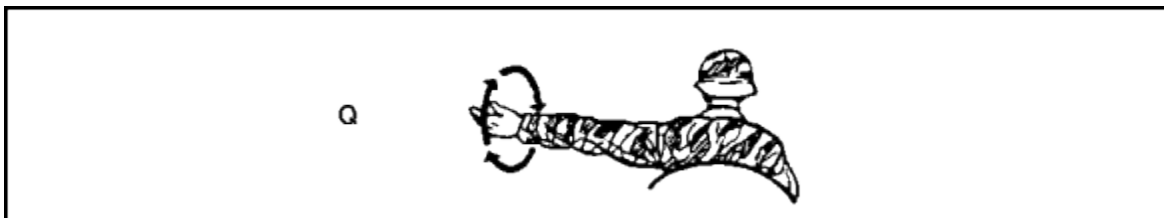


Figure 2-24. PASS and KEEP GOING signal.

(18) . To signal RIGHT TURN or COLUMN RIGHT, extend your right arm horizontally to the side with your palm to the front.



Figure 2-25. RIGHT TURN or COLUMN RIGHT signal.

(19) . To signal ATTENTION, extend your arm, sideways and slightly above the horizontal, with your palm to the front. Wave your arm toward and away from your head several times.

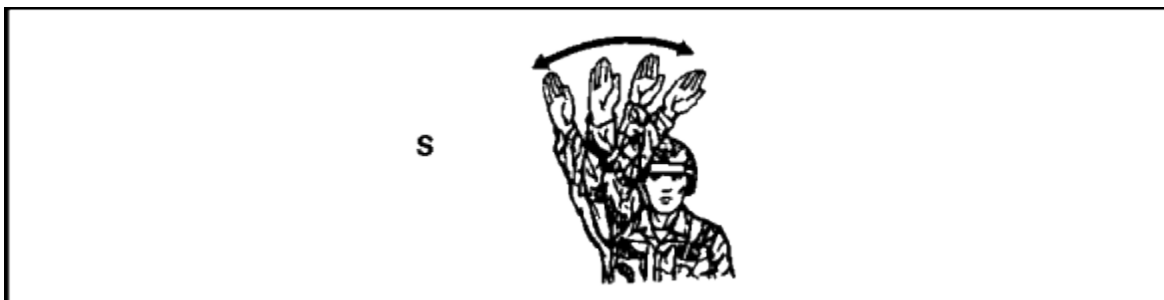


Figure 2-26. ATTENTION signal

(20) . To signal I AM READY or ARE YOU READY?, extend your arm toward the person being signaled. Then raise your hand slightly above horizontal with your palm facing outward.

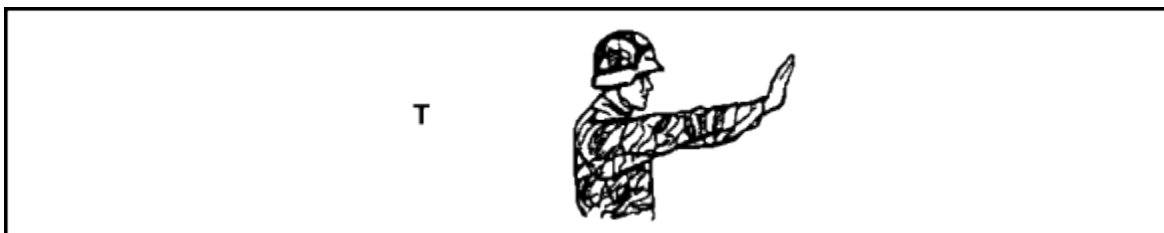


Figure 2-27. I AM READY or ARE YOU READY signal.

(21) . To signal DISREGARD PREVIOUS COMMAND or AS YOU WERE, raise both arms and cross them over your head, palms to the front.

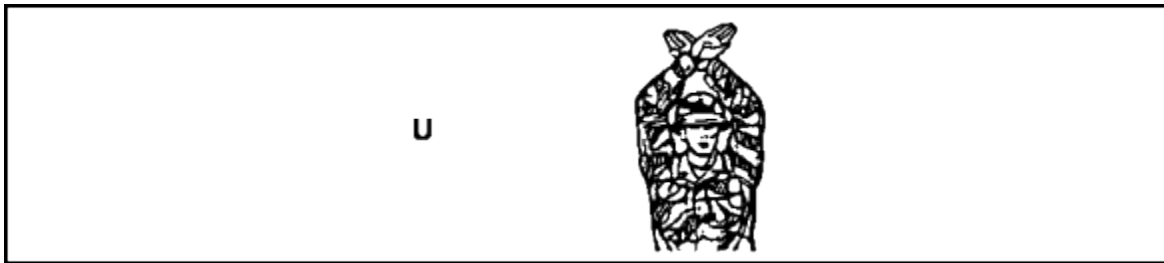


Figure 2-28. DISREGARD PREVIOUS COMMAND or AS YOU WERE signal.

(22) . To signal I DO NOT UNDERSTAND, raise both arms sideward to the front. Bend both arms at the elbows and place both hands across your face, palms to the front.

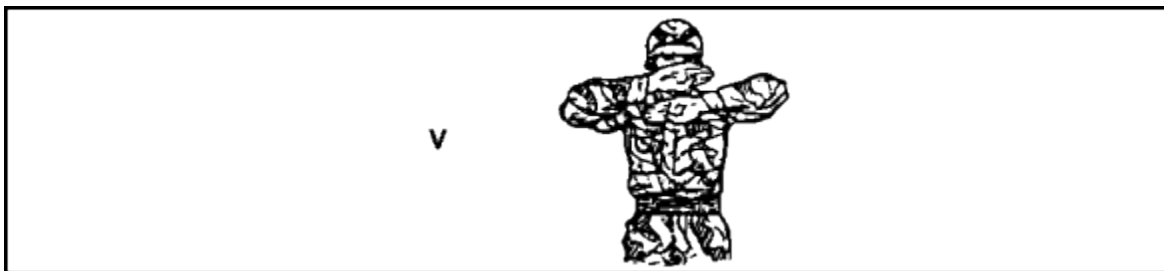


Figure 2-29. I DO NOT UNDERSTAND signal.

NOTE

The five arm-and-hand signals (labeled "A" through "E" in [Figures 2-30 through 2-34](#)) are made using a flashlight to control vehicles.

(23) . To signal START ENGINES, move the light to describe a horizontal figure 8 in a vertical plane in front of the body.



Figure 2-30. START ENGINES signal.

(24) . To signal STOP or STOP ENGINES, move the light horizontally back and forth several times across the path of approaching traffic to stop vehicles.

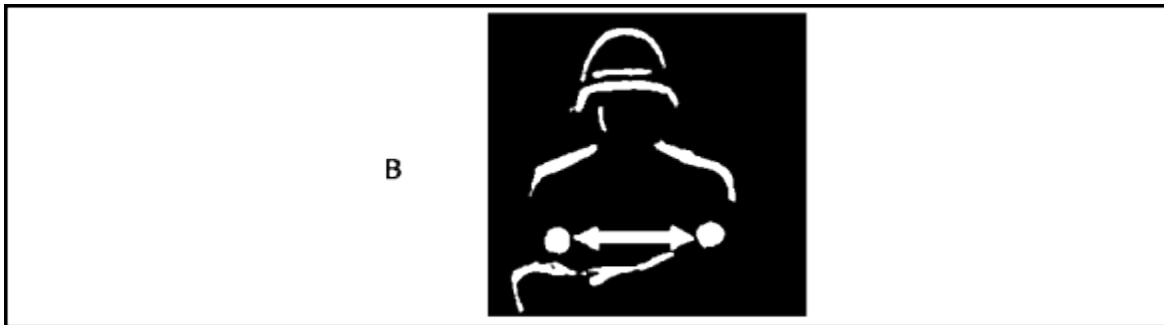


Figure 2-31. STOP or STOP ENGINES signal.

(25) . To signal GO, FORWARD, MOVE OUT, INCREASE SPEED, or DOUBLE TIME, move the light vertically several times in front of your body.

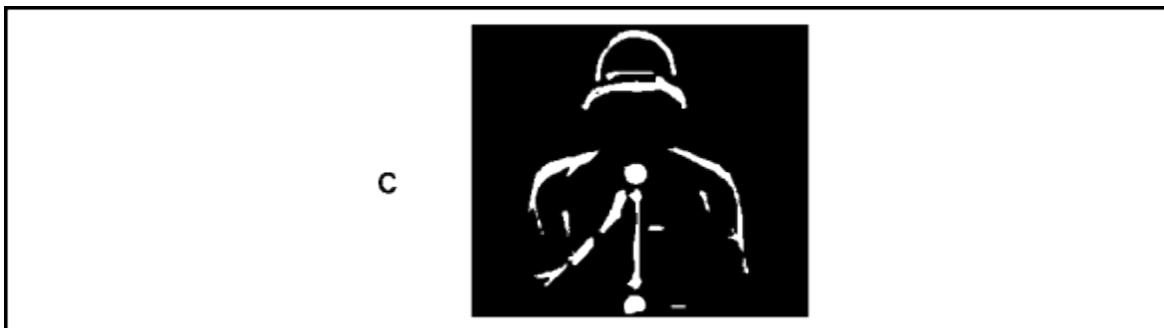


Figure 2-32. GO; FORWARD; MOVE OUT; INCREASE SPEED; or DOUBLE TIME signal.

(26) . To signal MOVE IN REVERSE (for vehicles which are not moving), hold the light at shoulder level and blink it several times toward the vehicles. Use this same signal to signal SLOW DOWN (for vehicles which are moving).

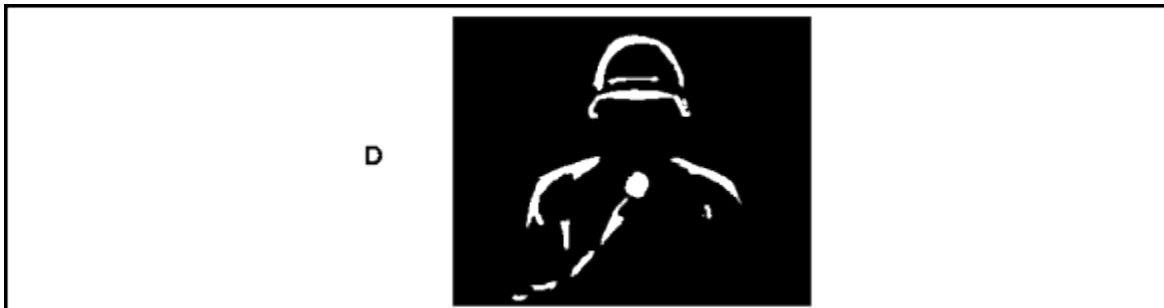


Figure 2-33. MOVE IN REVERSE signal for Vehicles Not Moving or SLOW DOWN signal For Moving Vehicles.

(27) . To signal TURN LEFT or TURN RIGHT, rotate the light to describe a circle 12 inches in diameter in the desired direction of the turn.

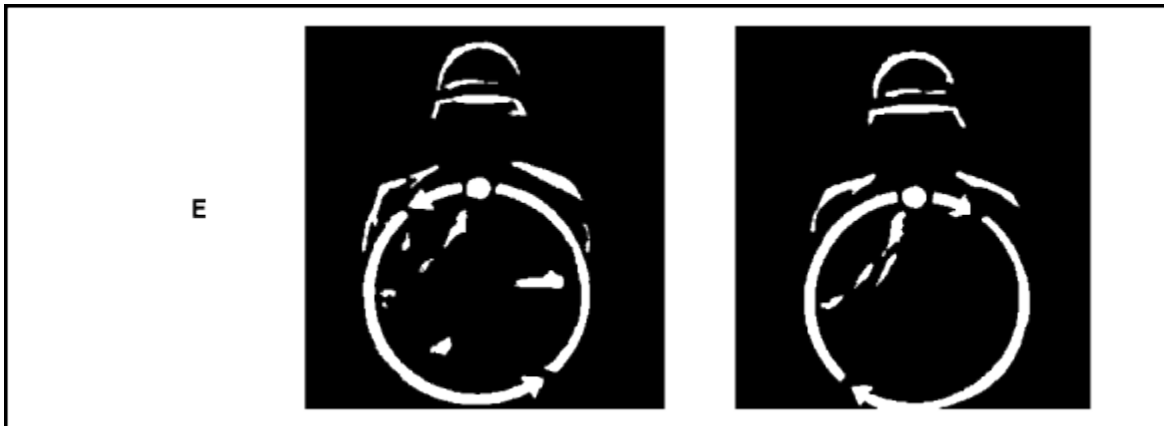


Figure 2-34. TURN LEFT or RIGHT signal.

b. . Listed below are selected standard arm-and-hand signals and flag signals that you should know.

(1) . To signal TRAVELING, hold a green flag in your right hand or fully extend your index finger upward, as shown in [Figure 2-35](#). Rotate your arm in a circle clockwise.

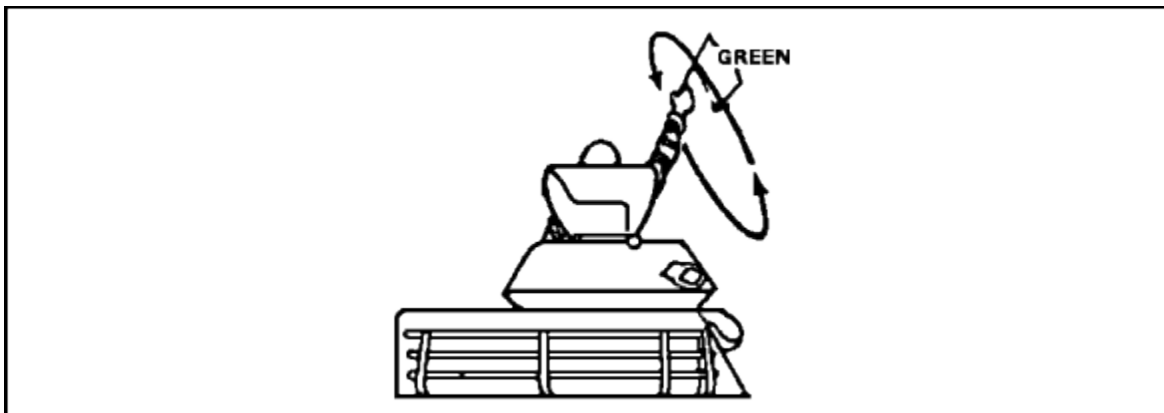


Figure 2-35. TRAVELING signal.

(2) . With the green flag in your right hand and the yellow flag in the left hand or the index fingers of both hands extended, give the signal by waving your arms in a modified version of the backstroke, as shown in [Figure 2-36](#).

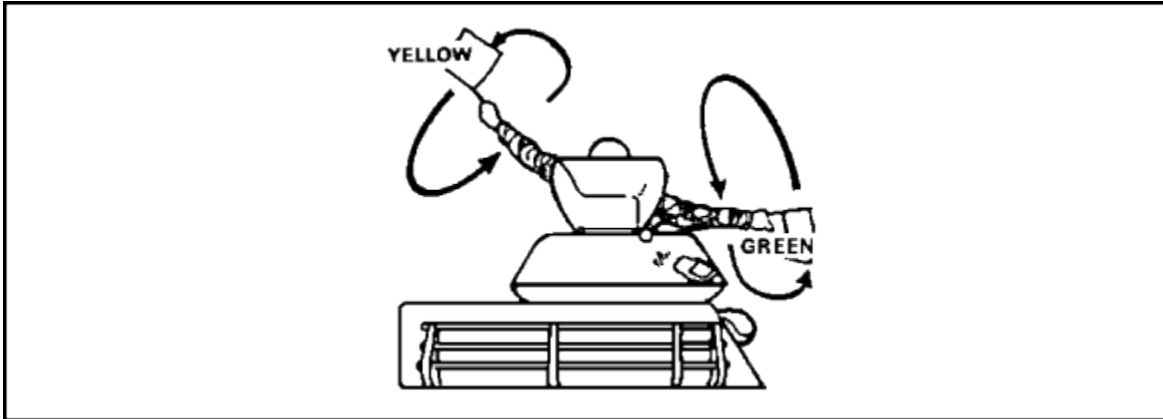


Figure 2-36. TRAVELING OVERWATCH signal.

(3) . To signal CEASE FIRING, raise your hand in front of your forehead, palm to the front, and swing your hand and forearm up and down several times in front of your face, as shown in [Figure 2-37](#).



Figure 2-37. CEASE FIRING signal.

(4) . To signal DISMOUNT, extend your arm sideways 45-degrees above horizontal, with your palm down, and lower it to your side, as shown in [Figure 2-38](#). You may use both arms in giving this signal. Repeat it until it is understood.

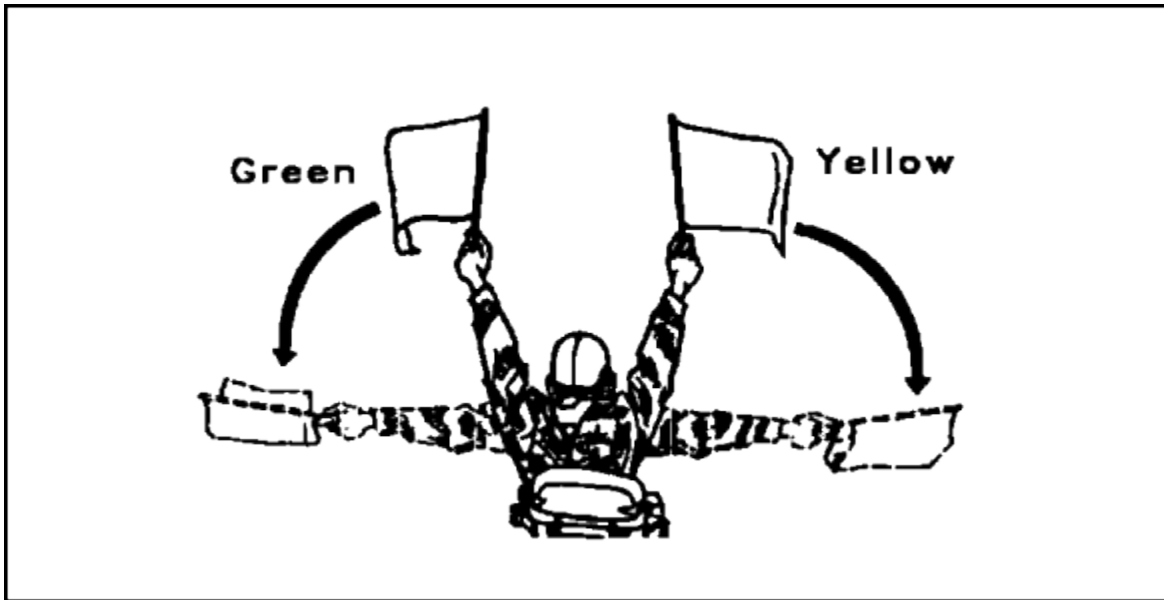


Figure 2-38. DISMOUNT signal.

(5) . To signal MOVE UP ON MY LEFT, hold a red flag in your left hand, as shown in [Figure 2-39](#). Move the flag from a fully extended upward to a 90-degree position at your side and then raise it upward again.

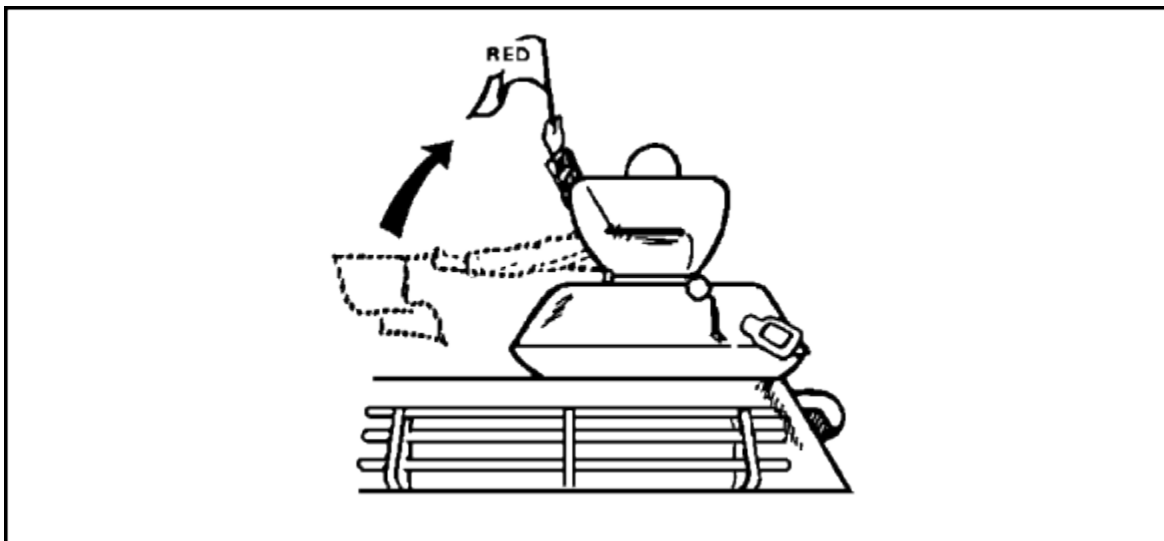


Figure 2-39. MOVE UP ON MY LEFT signal.

(6) . To signal MOVE UP ON MY RIGHT, hold a red flag in your right hand, as shown in [Figure 2-40](#). Move the flag from a fully extended to a 90-degree position at your side. Then raise it upward again.

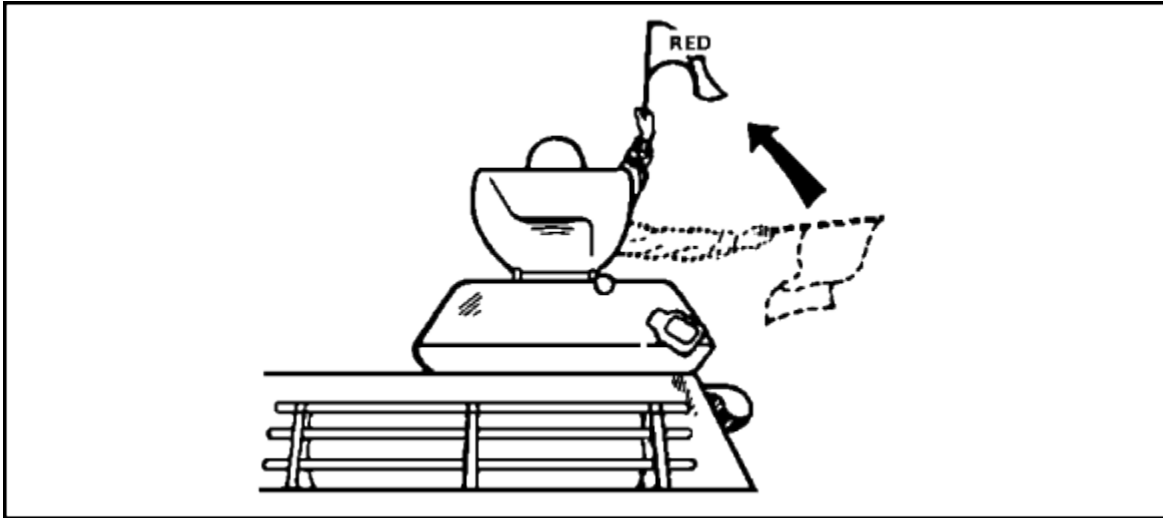


Figure 2-40. MOVE UP ON MY RIGHT signal.

(7) . To signal COVER OUR MOVE, fully extend your arm, bend your arm at the elbow, and touch the top of your helmet with the flat of your hand, as shown in [Figure 2-41](#).

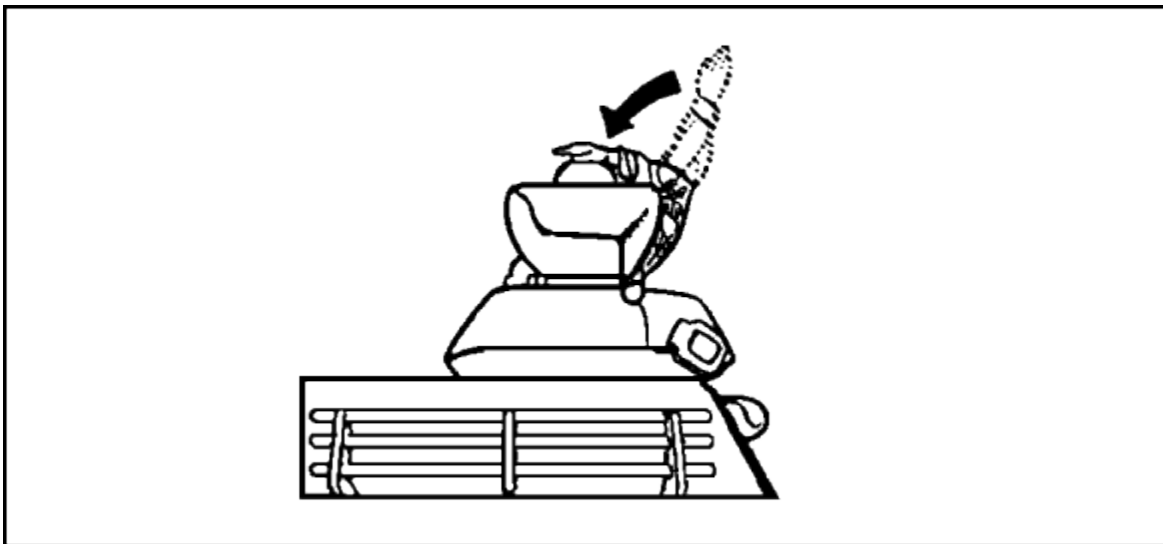


Figure 2-41. COVER OUR MOVE signal.

(8) . To signal ENEMY IN SIGHT, hold your rifle in the ready position at shoulder level. Point the rifle in the direction of the enemy as shown in [Figure 2-42](#).



Figure 2-42. ENEMY IN SIGHT signal.

(9) . To signal COMMENCE FIRING, extend your arm in front of your body, palm down, and move it through a wide horizontal area several times, as shown in [Figure 2-43](#).



Figure 2-43. COMMENCE FIRING signal.

(10) . To signal DANGER or ENEMY IN SIGHT, hold a red flag and raise your arm in a vertical position, as shown in [Figure 2-44](#).

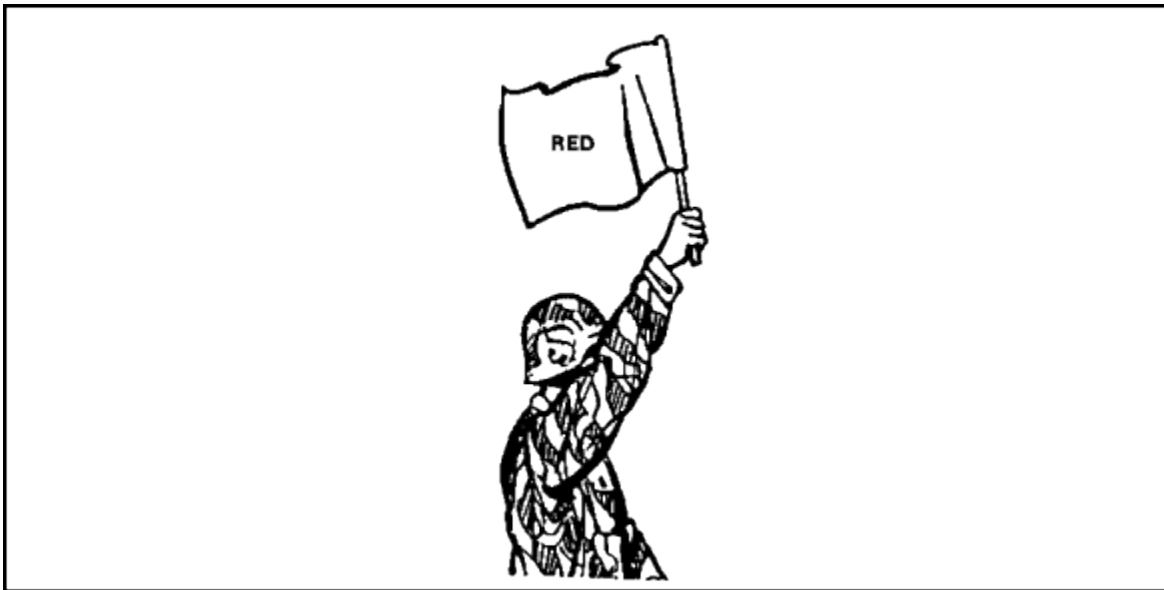


Figure 2-44. DANGER or ENEMY IN SIGHT signal.

(11) . To signal MOVE OUT, hold a green flag with your right arm fully extended to the right, as shown in [Figure 2-45](#). Raise your arm in a sweeping motion back and forth above your head.

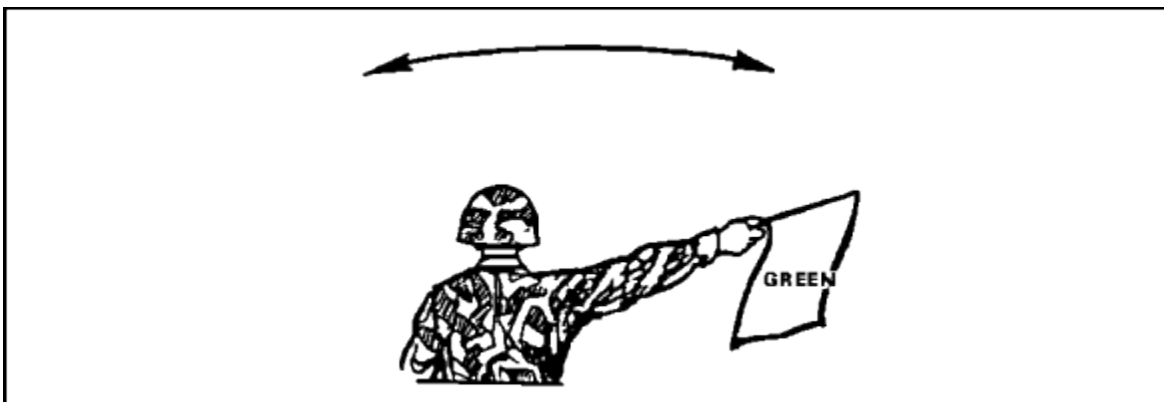


Figure 2-45. MOVE OUT signal.

(12) . After masking, hold red and yellow flags above your head in your right hand and hold a green flag overhead in your left hand, as shown in [Figure 2-46](#), to signal NBC HAZARD PRESENT.

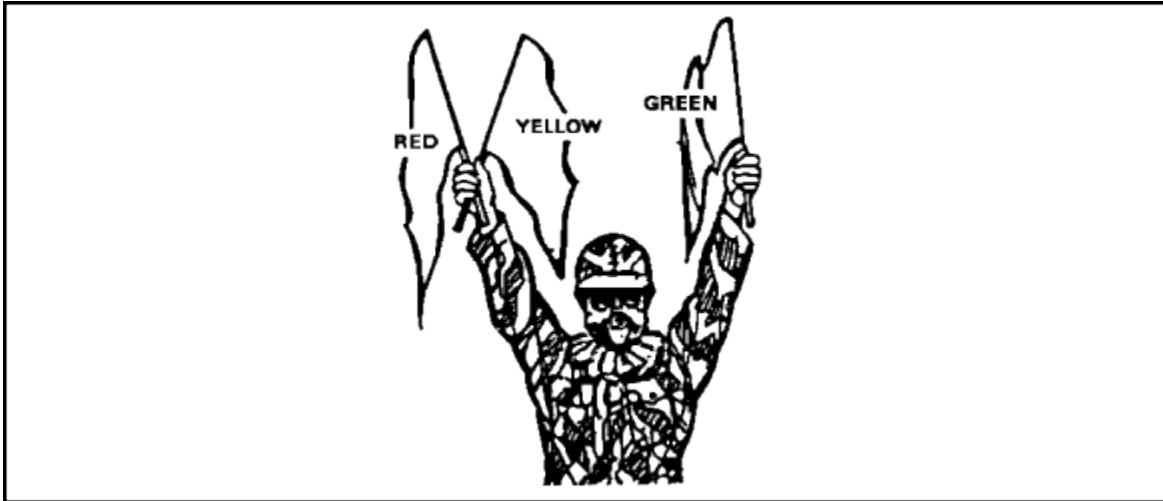


Figure 2-46. NBC HAZARD PRESENT signal.

(13) . With your right arm fully extended at a 90-degree angle (flag optional), raise it to a full extended upward position, as shown in [Figure 2-47](#), to signal MOUNT.

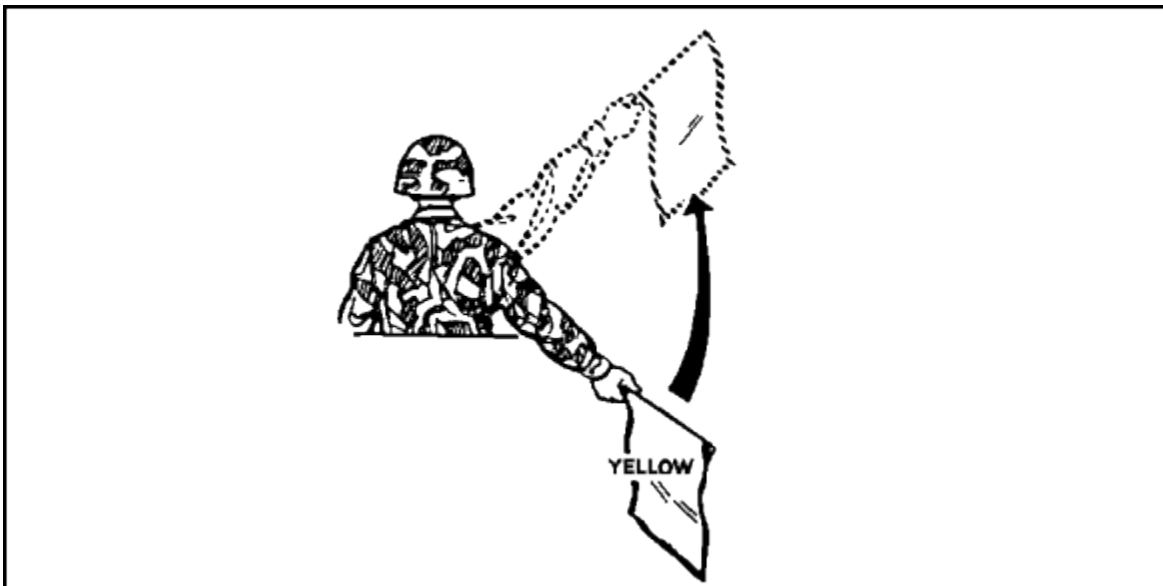


Figure 2-47. MOUNT signal.

(14) . To signal DISMOUNT, hold a green flag in your left hand, a yellow flag in your right hand and move your arms from vertical to horizontal, as shown in [Figure 2-48](#).

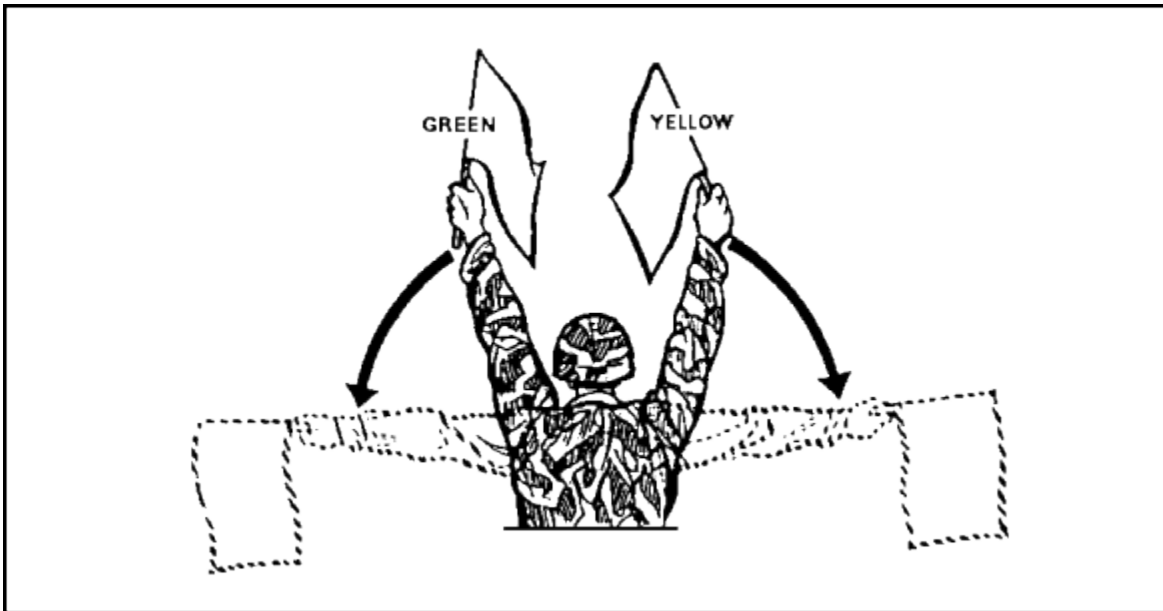


Figure 2-48. DISMOUNT signal.

(15) . To signal DISMOUNT AND ASSAULT, hold a red flag in your left hand and a green flag in your right hand. Move the flags from vertical to horizontal, as shown in [Figure 2-49](#).

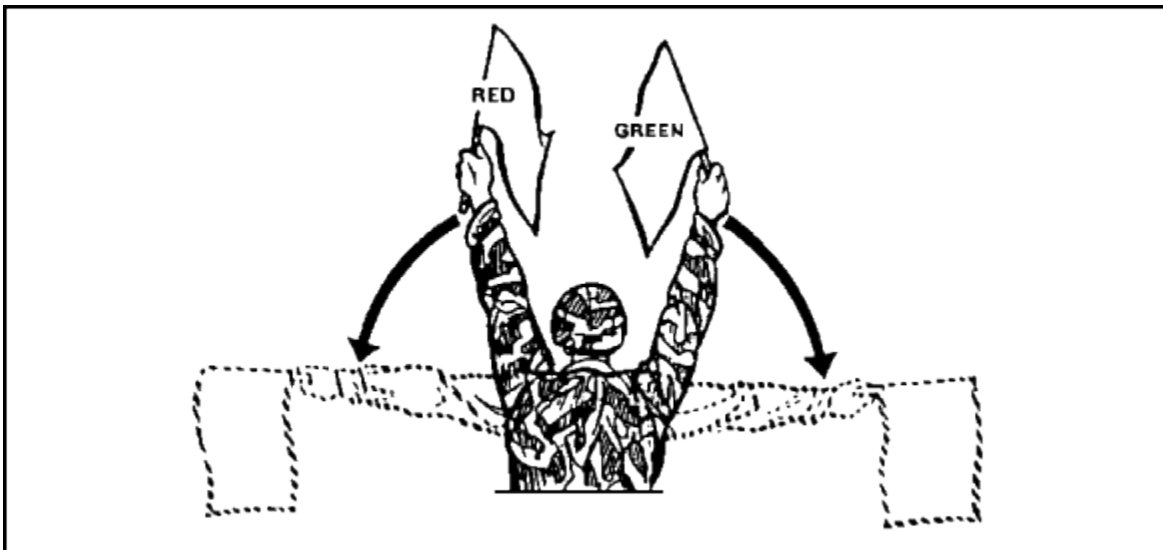


Figure 2-49. DISMOUNT AND ASSAULT signal.

(16) . To signal ASSEMBLE or CLOSE, hold yellow and green flags in your right hand, overhead in a vertical position, as shown in [Figure 2-50](#).

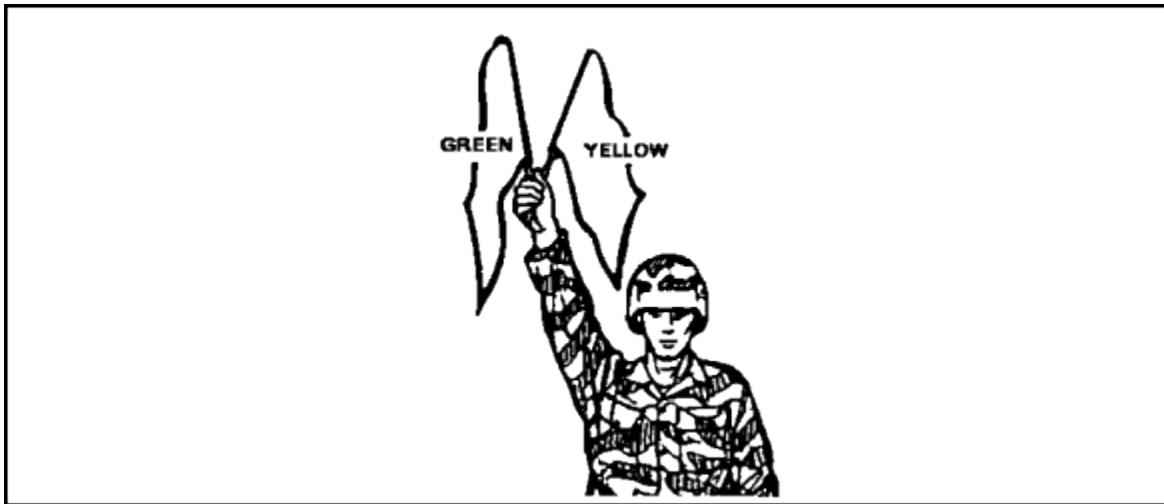


Figure 2-50. ASSEMBLE or CLOSE signal.

c. . Platoon movement formations and signals to direct these formations are shown in [Figures 2-51 through 2-56](#).

(1) . [Figure 2-51](#) shows the arm-and-hand signal, with and without the use of flags, used to indicate a left (or right) turn.

NOTE

If flags are used, use a green flag to indicate a left turn. For a right turn, reverse the signal and use a yellow flag.

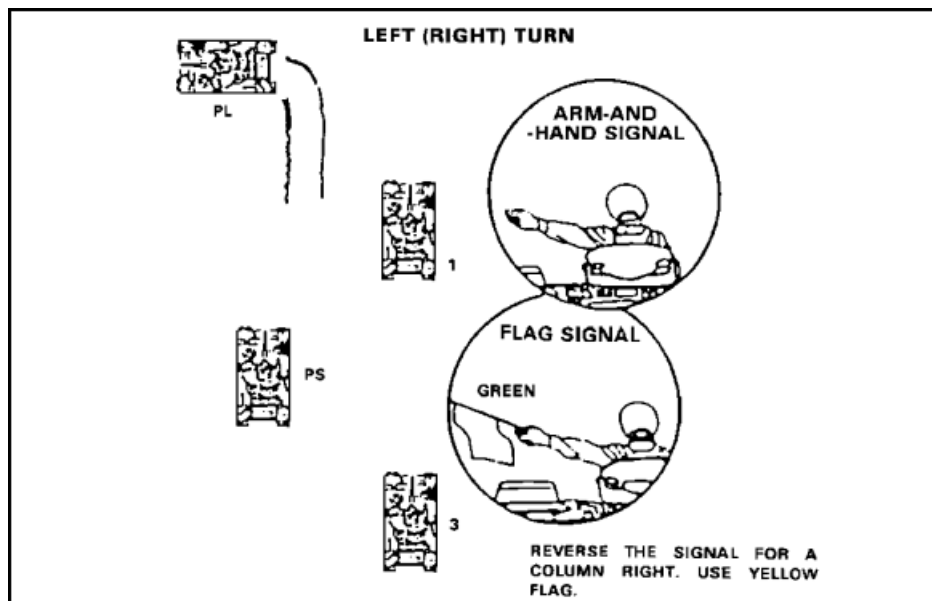


Figure 2-51. LEFT (RIGHT) TURN signal.

(2) . [Figure 2-52](#) shows the arm-and-hand signal used to indicate an echelon formation. The use of flags is optional. The arms are extended outward and diagonally, the left arm above and the right arm below the shoulder, to indicate a left echelon formation. A green flag is held in the left hand and a yellow flag in the right. Maintain a distance of 50 to 100 meters between vehicles. Reverse the signal to indicate a right echelon formation.

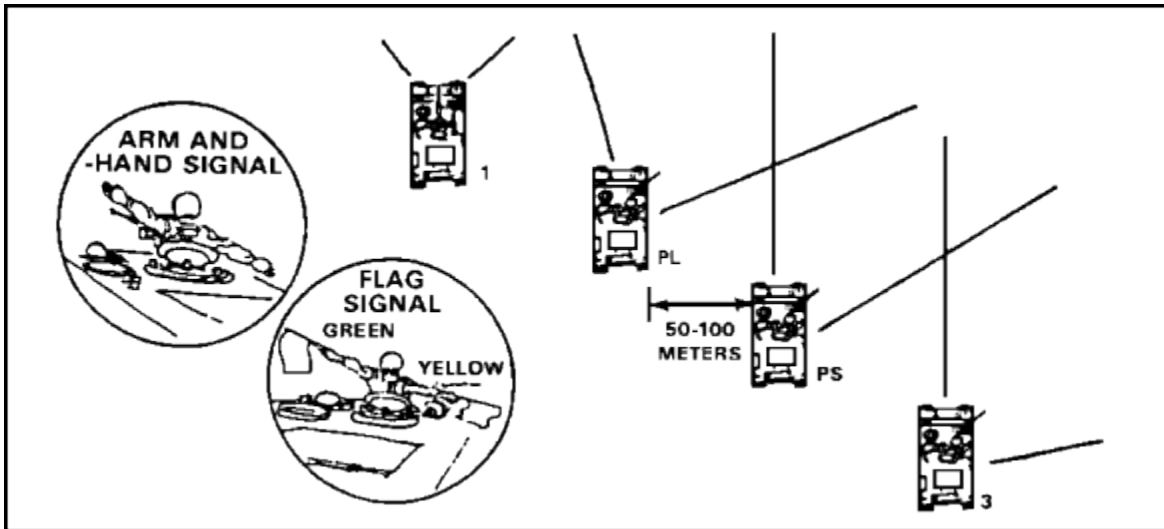


Figure 2-52. ECHELON FORMATION signal.

(3) . [Figure 2-53](#) shows the arm-and-hand signal used to indicate the herringbone formation. Extend both arms outward from your body at shoulder level. Bend your arms up at the elbow so that your arms form a 90-degree angle. Straighten your arms again so that they are extended at shoulder level. Repeat the signal until it is understood.

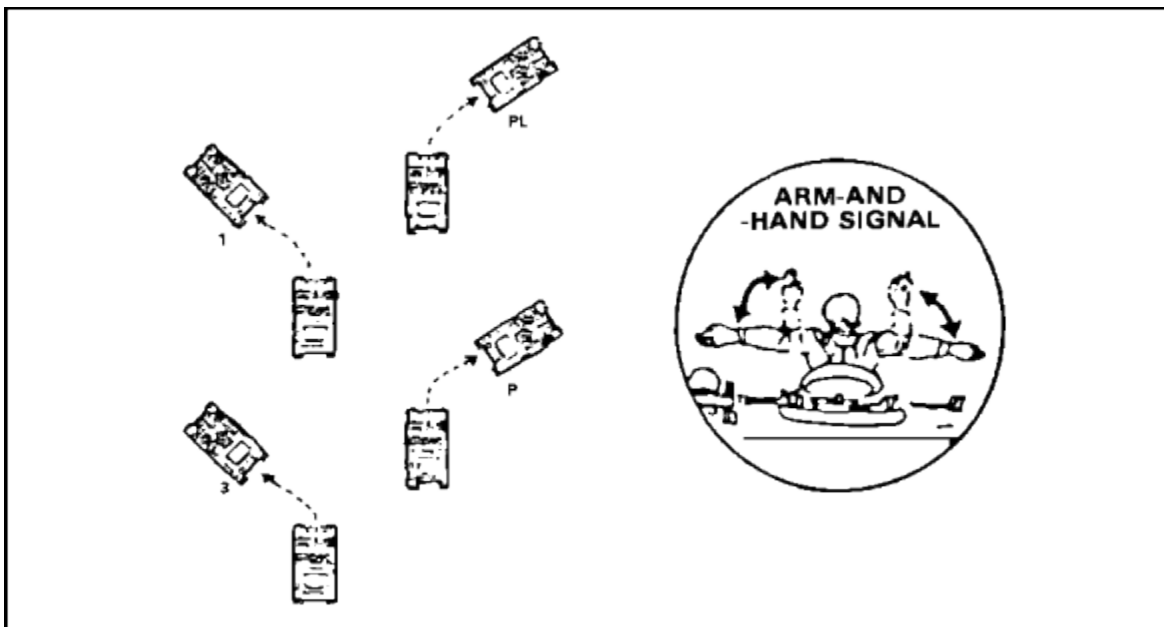


Figure 2-53. HERRINGBONE FORMATION signal.

(4) . [Figure 2-54](#) shows the arm-and-hand signal used to indicate a line formation. The use of flags is optional. To give this signal, extend your arms straight out from the sides at shoulder level. If flags are used, hold a green flag in your left hand and a yellow flag in your right hand.

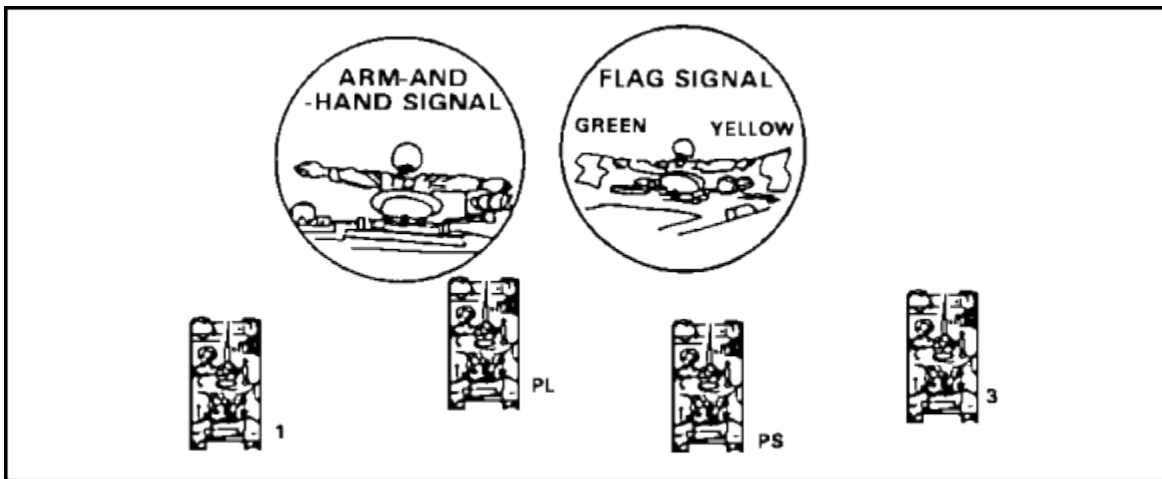


Figure 2-54. LINE FORMATION signal.

(5) . The arm-and-hand signal used to indicate a Vee formation is shown in [Figure 2-55](#). The use of flags is optional. Extend your arms above your head, in a "Vee." If flags are used, hold a green flag in your left hand and a yellow flag in your right hand.

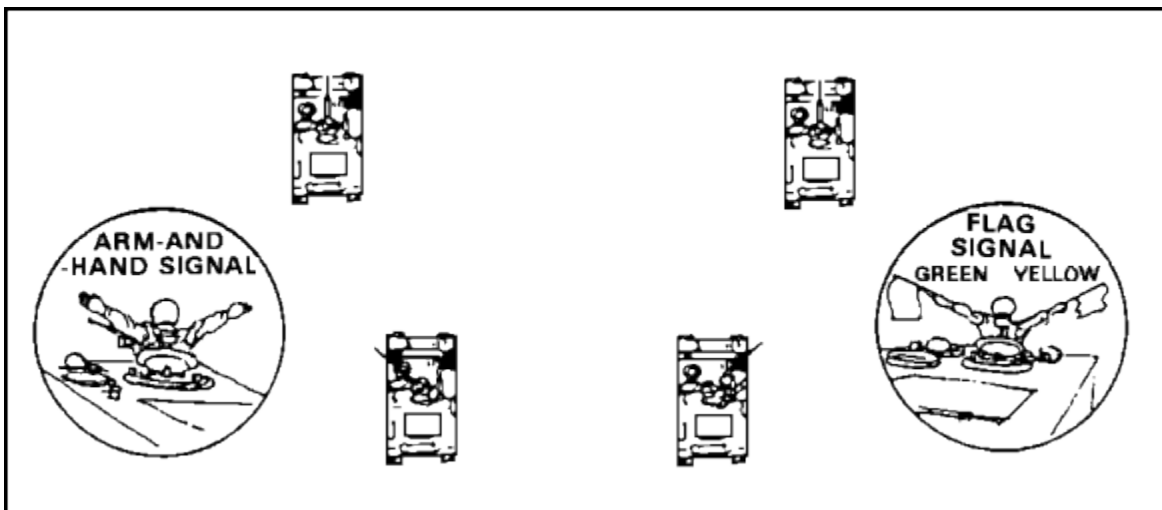


Figure 2-55. VEE FORMATION signal.

(6) . You may use any of three signals to indicate a wedge formation. These signals (old arm-and-hand, flag signal, and new (alternate) arm-and-hand) are shown in [Figure 2-56](#).

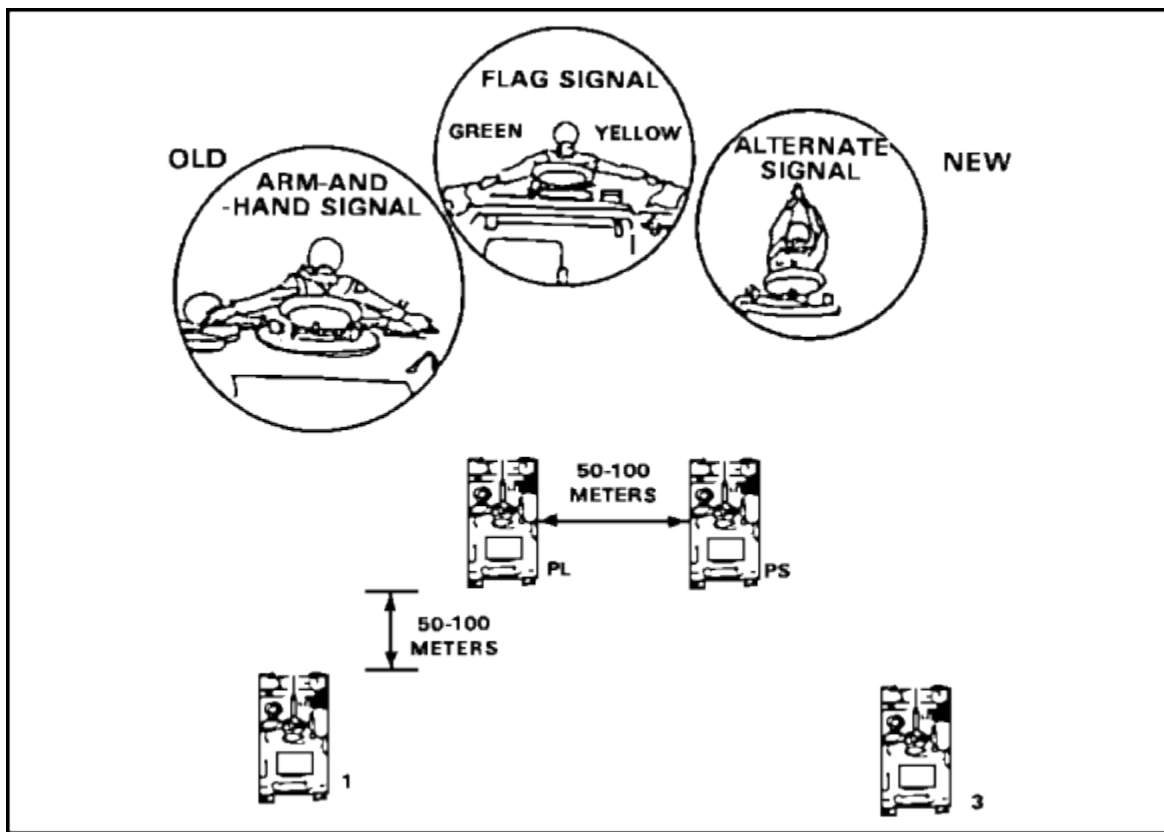


Figure 2-56. WEDGE FORMATION signal.

(7) . [Figure 2-57](#) shows the arm-and-hand signal used to indicate a line variation formation. The use of flags is optional. Extend your arms straight out to your sides at shoulder level. Move your right arm up and down. If flags are used, hold a green flag in your left hand and a yellow flag in your right hand.

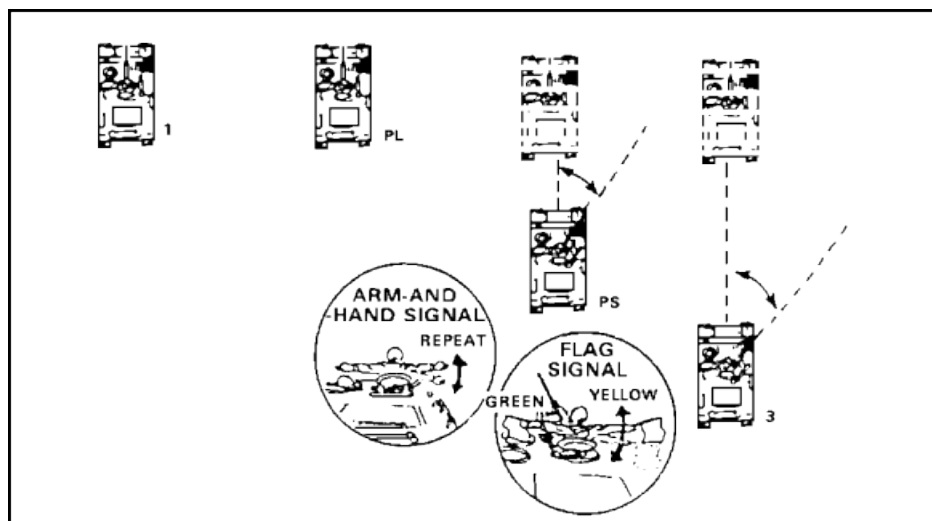


Figure 2-57. LINE VARIATION signal.

Practice Exercise

Lesson 2

Instructions The following items will test your understanding of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers with the answer key that follows. If you answer any item incorrectly, review that part of the lesson which contains the portion involved.

Situation for Question 1:

You are the leader of a TOW weapon system squad. Your weapon system is carried by an improved TOW vehicle. As you are moving from your primary firing position to an alternate firing position, you are engaged by enemy direct fire.

1. The best weapon to use to respond to this direct fire is—
 - ☐ A. M220-series launcher system.
 - ☐ B. .45-caliber pistols.
 - ☐ C. machine gun.
 - ☐ D. M16A1 rifles

Situation for Questions 2 through 6:

You are using arm-and-hand signals to control vehicles.

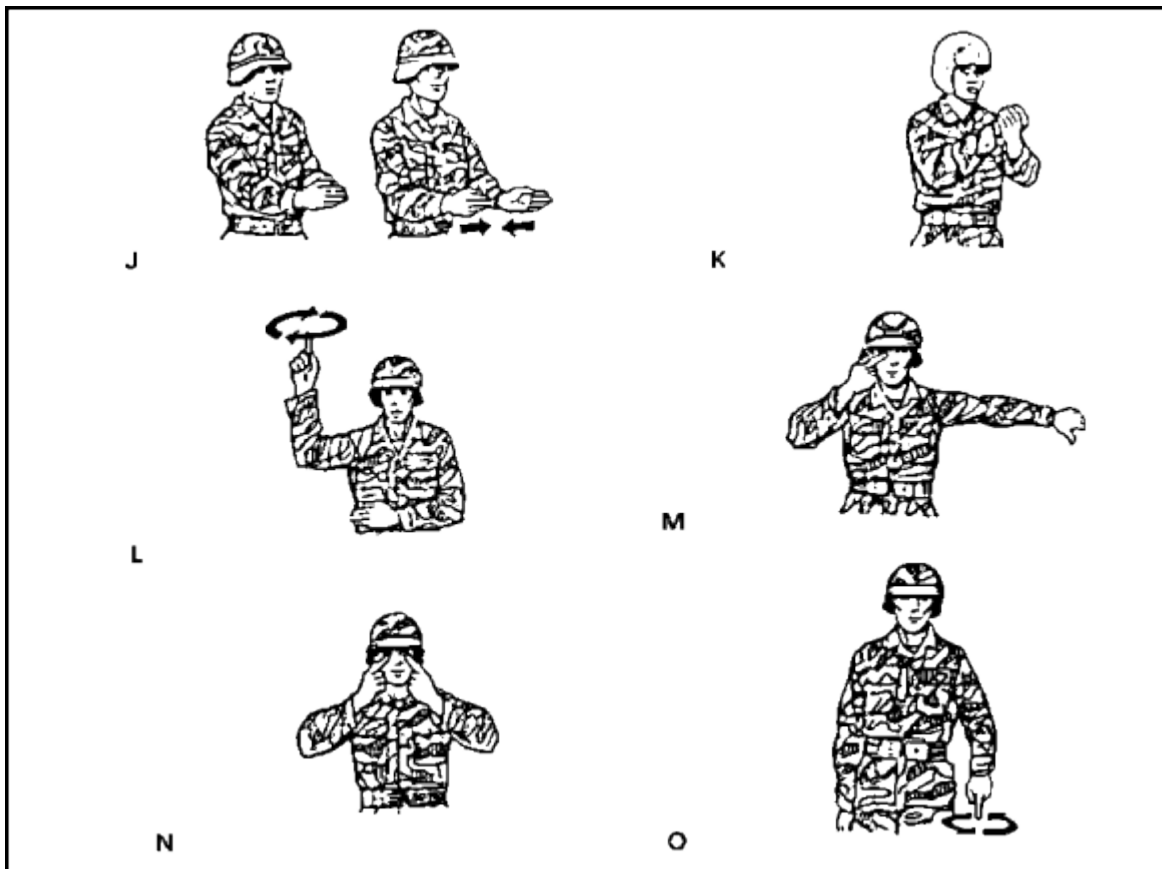


Figure 2-58. Arm-and-Hand Signals.

2. You want to signal RAISE RAMP. Which of the signals shown in [Figure 2-58](#) do you give?
 - ☐ A. "J."
 - ☐ B. "L."
 - ☐ C. "N."
 - ☐ D. "O."
 - ☐ E. "K."
 - ☐ F. "M."

3. You want to signal LIGHTS OFF. Which of the signals shown in [Figure 2-58](#) do you give?
 - ☐ A. "J."
 - ☐ B. "K."
 - ☐ C. "L."
 - ☐ D. "M."

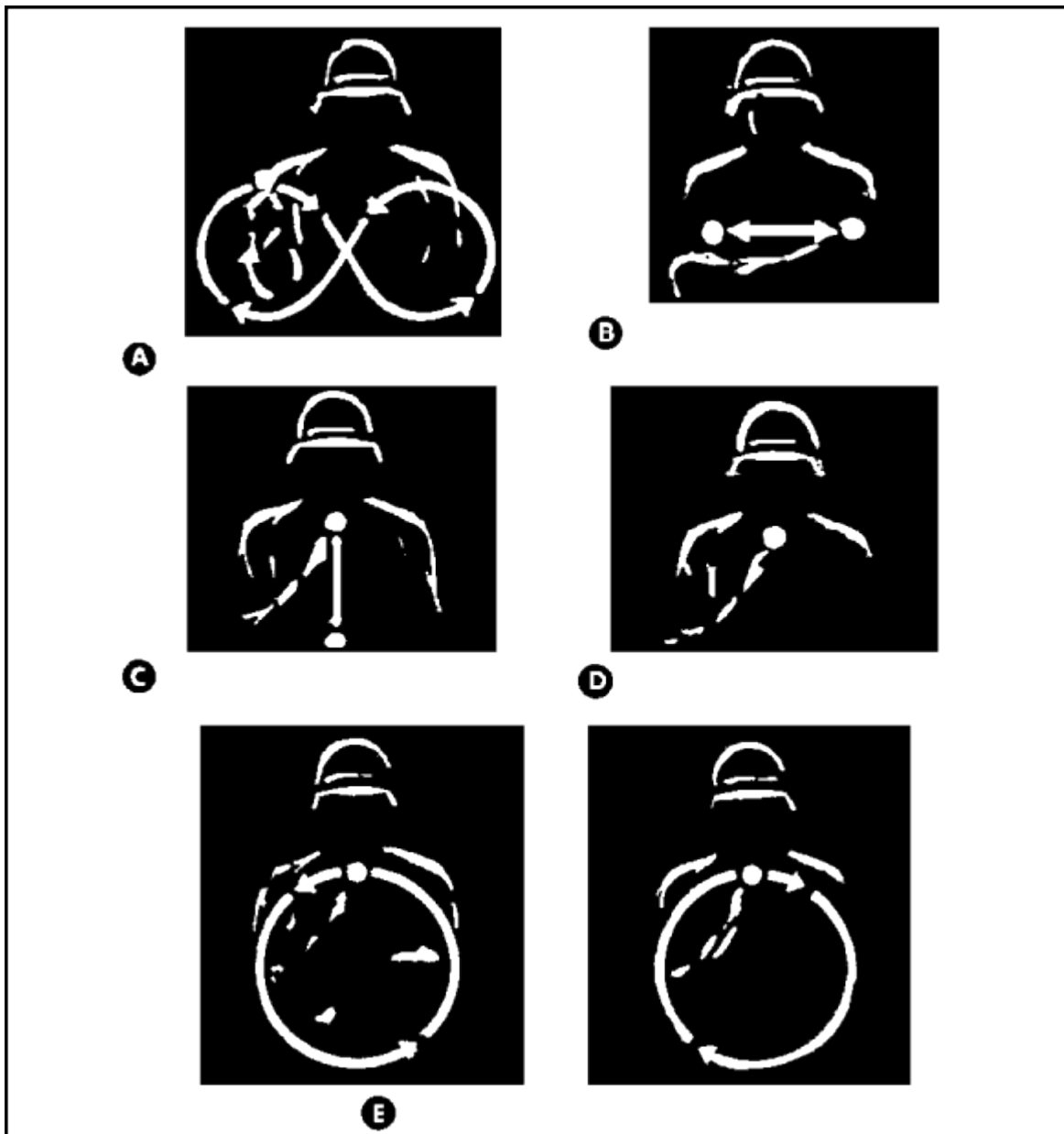


Figure 2-59. Using a Flashlight to Control Vehicle

4. You want to signal MOVE OUT. Which of the signals shown in [Figure 2-59](#) do you give?
- ☐ A. "A."
 - ☐ B. "B."
 - ☐ C. "C."
 - ☐ D. "D."
 - ☐ E. "E."

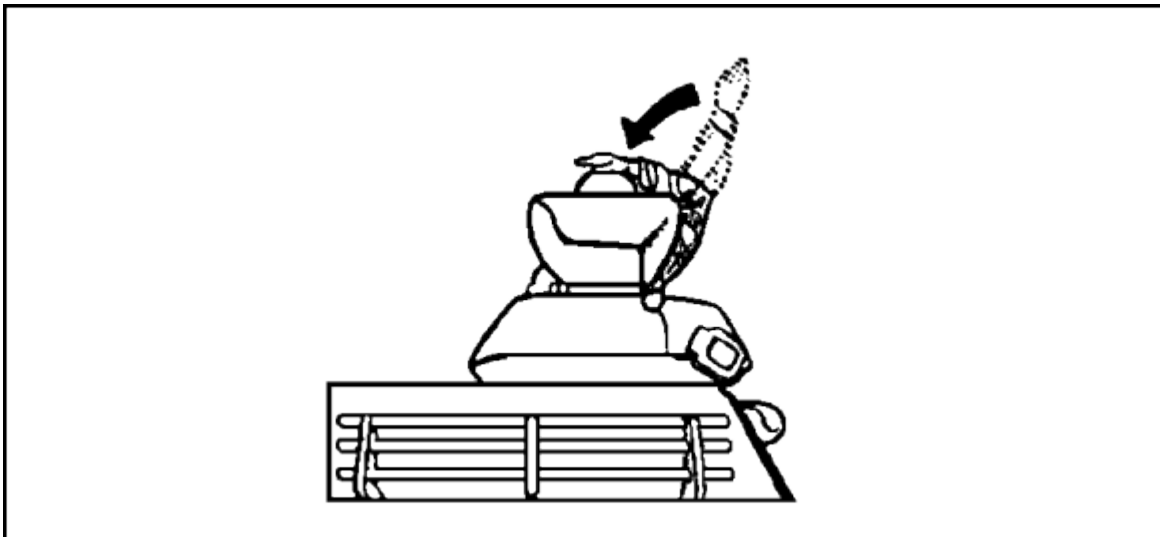


Figure 2-60. Tactical Signal.

5. You give the signal illustrated in [Figure 2-60](#). You are signaling—
- ☐ A. TRAVELING.
 - ☐ B. TRAVELING OVERWATCH.
 - ☐ C. DISMOUNT.
 - ☐ D. COVER OUR MOVE.

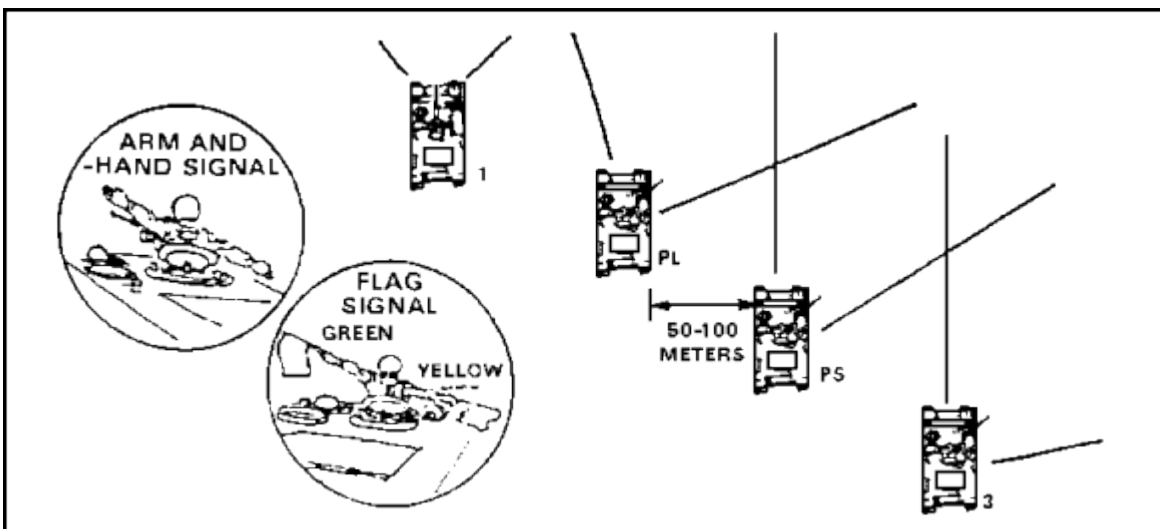


Figure 2-61. Platoon Movement Formation Signal.

6. You give the signal shown in [Figure 2-61](#). You are signaling—
- ☐ A. ECHELON FORMATION.
 - ☐ B. HERRINGBONE FORMATION.
 - ☐ C. VEE FORMATION.
 - ☐ D. WEDGE FORMATION.

PRACTICE EXERCISE ANSWERS

Situation for Question 1:

You are the leader of a TOW weapon system squad. Your weapon system is carried by an improved TOW vehicle. As you are moving from your primary firing position to an alternate firing position, you are engaged by enemy direct fire.

1. The best weapon to use to respond to this direct fire is—
 - a. M220-series launcher system.
 - b. .45-caliber pistols.
 - c. [machine gun](#).
 - d. M16A1 rifles.

Situation for Questions 2 through 6:

You are using arm-and-hand signals to control vehicles.

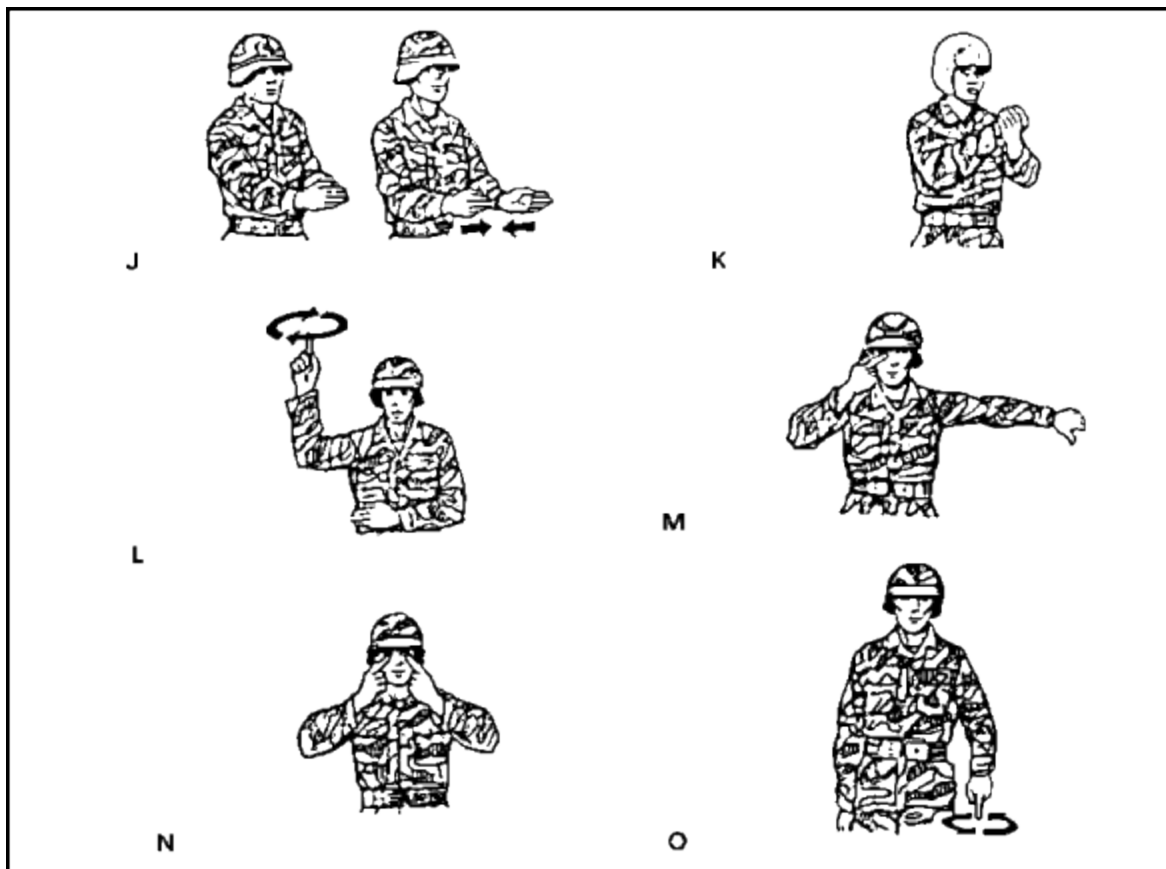


Figure 2-58. Arm-and-Hand Signals.

2. You want to signal RAISE RAMP. Which of the signals shown in [Figure 2-58](#) do you give?

- a. "J."
- b. "L."
- c. "N."
- d. "O."
- e. "K."
- f. "M."

3. You want to signal LIGHTS OFF. Which of the signals shown in [Figure 2-58](#) do you give?

- a. "J."
- b. "K."
- c. "L."
- d. "M."

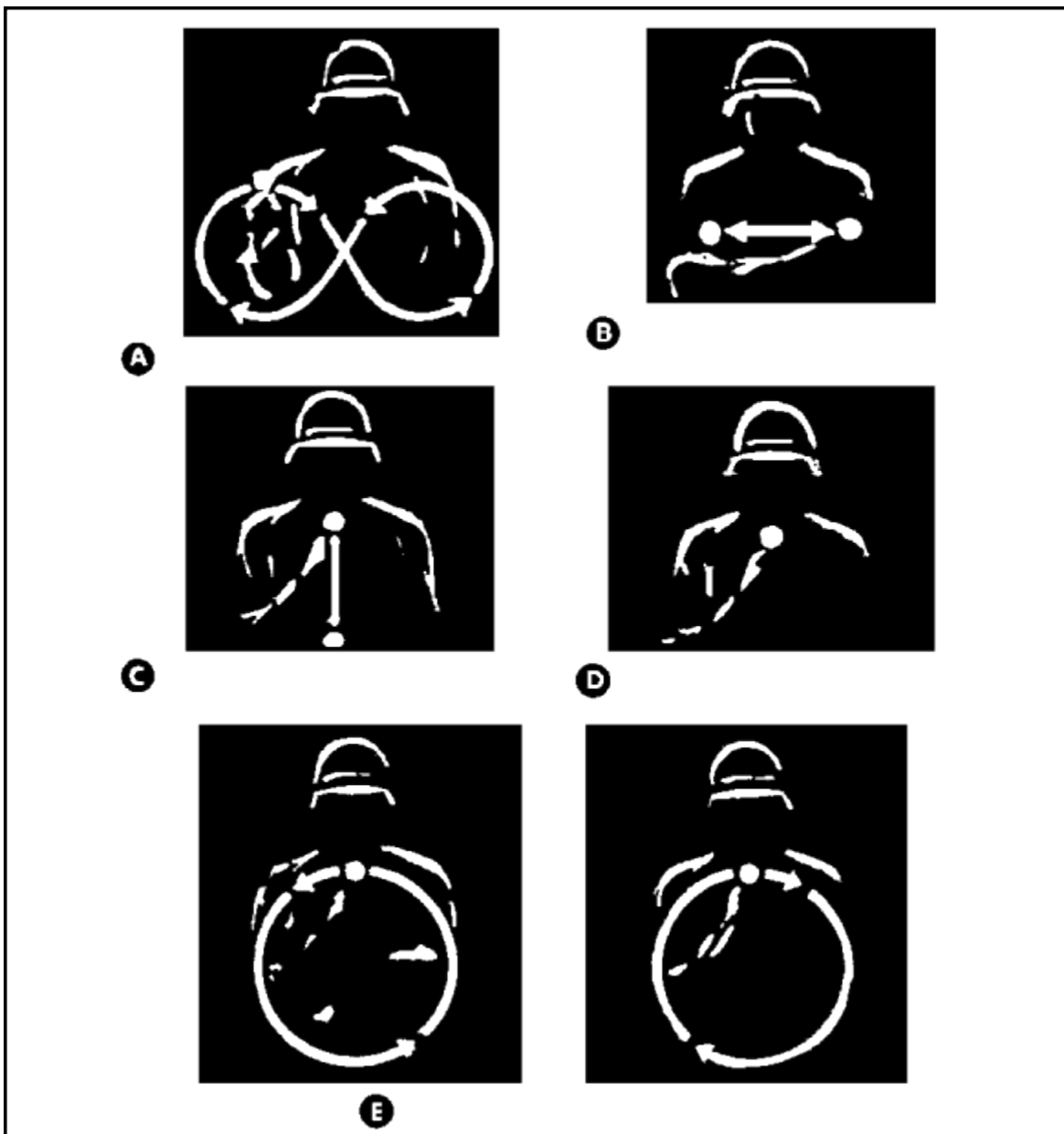


Figure 2-59. Using a Flashlight to Control Vehicle

4. You want to signal MOVE OUT. Which of the signals shown in [Figure 2-59](#) do you give?
- a. "A."
 - b. "B."
 - c. "C."
 - d. "D."
 - e. "E."

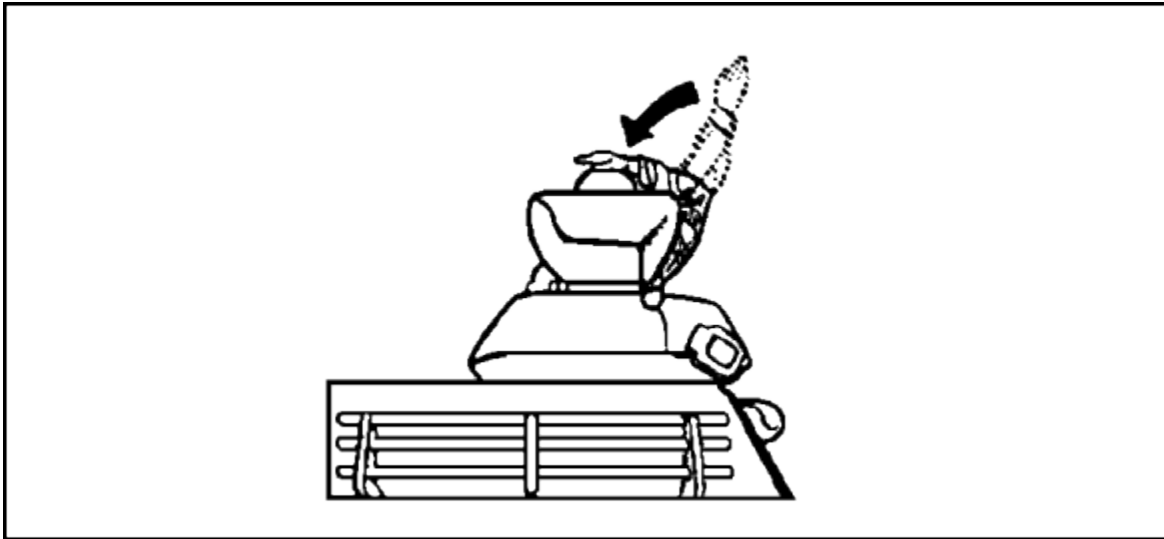


Figure 2-60. Tactical Signal.

5. You give the signal illustrated in [Figure 2-60](#). You are signaling—
- TRAVELING.
 - TRAVELING OVERWATCH.
 - DISMOUNT.
 - [COVER OUR MOVE.](#)

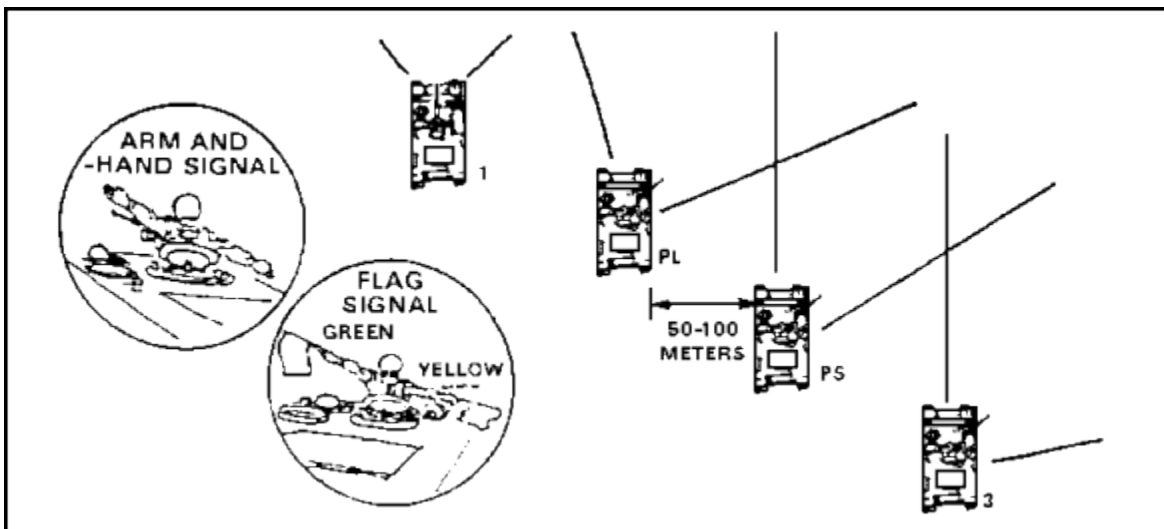


Figure 2-61. Platoon Movement Formation Signal.

6. You give the signal shown in [Figure 2-61](#). You are signaling—
- [ECHELON FORMATION.](#)
 - HERRINGBONE FORMATION.
 - VEE FORMATION.
 - WEDGE FORMATION.

Lesson 3

SELECT AND OCCUPY TOW FIRING POSITIONS

OVERVIEW

Lesson Description:

In this lesson, you will learn to select primary, alternate, and supplementary TOW weapon positions, and to conduct the occupation of a TOW firing position.

Terminal Learning Objective:

Action: Select primary, alternate, and supplementary TOW weapon positions and conduct the occupation of a TOW firing position.

Condition: You will be given information contained in this lesson.

Standard: Identify the procedures for selecting primary, alternate, and supplementary TOW weapon positions and for conducting the occupation of a TOW firing position.

References: The material contained in this lesson was derived from the following publications:

[FM 7-91](#) 1987

[FM 23-34](#) 1994

INTRODUCTION

Primary, alternate, and supplemental firing positions are of vital importance to carrier-mounted TOW squads, sections, and platoons. This lesson provides instruction in selecting these firing positions with regard to planning considerations; characteristics of good firing positions; night firing requirements; routes into, out of, and between positions; movement between positions; and occupying, covering, concealing, camouflaging, improving, and using firing positions to your best advantage.

PART A

SELECT PRIMARY, ALTERNATE, AND SUPPLEMENTARY TOW WEAPON POSITIONS

1. . TOW squads use firing positions when operating in the offense and defense. Due to the fluid nature of offensive operations, TOW firing positions are usually unprepared defilade positions. They are occupied while the TOW squad is en route to an objective. When platoons and sections are moving, their leaders search for covered and concealed firing positions and routes to them. When a visual reconnaissance of the terrain cannot be made, tentative firing positions and routes should be selected from a map reconnaissance. In the defense, firing positions usually have improved frontal and overhead

protection. The defender has more time to learn the terrain and, therefore, to increase his protection and concealment. A TOW firing position must provide protection for the weapon system and its crew and still allow target engagement. When selecting firing positions, leaders should realize the ability of their units to engage the enemy from those positions.

2. . In the offense, the TOW is employed on its weapon system carrier (M966, M901, or M113). In the defense, it may be employed mounted or dismounted. In describing how to employ the TOW, a platoon leader must consider several factors. Moving the carrier vehicle into the firing position and concealing its tracks may be impossible or impractical. If so, the TOW system should be dismounted and the vehicle parked in a concealed location to the rear of the firing position. Also, the leader must consider the loss of mobility when the TOW is not mounted.

3. . The greatest danger to TOW squads is indirect fires. For this reason, cover, concealment, camouflage, and the selection of firing positions are crucial. Squads must avoid firing positions that could be easily identified with a map reconnaissance—this is important. Threat artillery and mortar fires supporting an attack normally are fired from a planned schedule. Well-selected positions can help TOW squads avoid much of these fires. However, the Threat has a limited ability to fire on targets of opportunity.

a. . Each squad leader should select firing positions that afford maximum protection while allowing the gunner to engage the targets. Selection of firing positions begins when each section is assigned a mission, a sector of fire or engagement area, and a general location. The section leader designates a general firing position for each of his squads and designates an exact location for the squad he is with. If time is available, the section leader may also designate an exact position for the other squad.

b. . Ideally, each squad's position should provide the following—

- (1) Cover to the front, flank, and overhead.
- (2) Concealment from ground and aerial observation.
- (3) Good observation and fields of fire into the assigned sector of fire or engagement areas.
- (4) Covered and concealed routes to and between positions.
- (5) Mutual support between squad positions and with other elements.

c. . Positions should be selected below ridgelines and crests, preferably on the sides of hills. Positions and the routes to them should be dry and level. Positions in swampy areas and steep hillsides should be avoided, as should positions on or near prominent terrain features.

NOTE

Too much elevation requires the gunner to track laterally (moving targets in three dimensions at one time), left and right, and up and down, to compensate for range.

- d. . At night, TOW squads should be positioned where they can detect and engage targets. Leaders should not assume that darkness will hide their firing positions. Night vision devices available to Threat forces allow them to see almost as well in darkness as in daylight. Thermal night vision devices can sense the heat emitted by a hot or cooling engine. They also allow the viewer to see through smoke, fog, or even light foliage or camouflage.
- e. . Once a position is selected, a unit should strive to improve it for as long as it is occupied. If a unit is to stay in a position for a long time, extensive improvements can be made, especially with engineer assistance.

4. . Each squad should have a primary firing position and as many alternate positions as practical. Depending upon terrain and mission, a supplementary position may also be assigned, as shown in [Figure 3-1](#). Primary and alternate positions are used in the offense and the defense, while the supplementary position is used only in the defense.

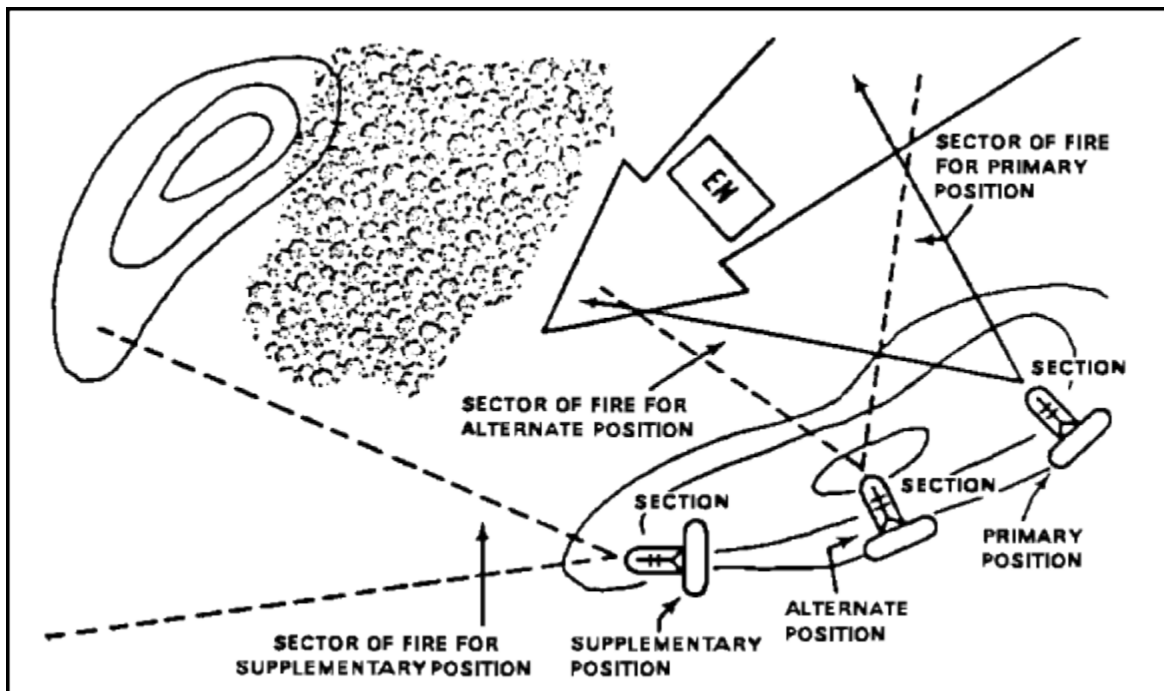


Figure 3-1. Primary, Alternate, and Supplementary Firing Positions.

- a. . The primary position is the initial firing position from which a squad covers an assigned sector of fire or engagement area. It should be the best location from which to engage vehicles. The platoon leader or the section leader usually designates its general location.
- b. . An alternate position must allow a squad to cover the same area as the primary position. The platoon leader or the section leader may designate its location. Given adequate time in the defense, each alternate position should be prepared with as much care as the primary position.
 - (1) Distance of Alternate Position from Primary Position. If possible, an alternate position should be 300 meters or more from the primary or other alternate position. This lessens the chance of indirect fire from suppressing the primary and alternate positions at

the same time. Terrain may not allow for this, but it should always be considered when selecting alternate positions.

(2) Reporting the Location of Alternate Positions. The platoon leader or the section leader usually designates the location of alternate positions. When the squad leader selects the alternate position, he should report each location to the section leader and the platoon leader. During the battle, he should also report when he moves to an alternate position.

c. . The supplementary position covers an area or possible avenue of enemy approach that cannot be covered from the primary or alternate positions. It is usually designated to cover areas or approaches to the flank or rear of a unit. This position should be reconnoitered, and a range card should be prepared. At times, the OPORD will specify that the position is to be prepared. Normally, a supplementary position is occupied only on order.

5. . The Threat considers antitank guided missiles ATGMs (TOWs) to be critical targets. He will be expecting TOW fires and will react immediately to suppress them. Because of this, TOW squads must be prepared to move to their alternate positions as directed by the section leader. However, the platoon leader may reserve the authority to approve the squad leader's request to move. He must coordinate the movement of his sections and squads so that all of the weapons are not moving at once. At least one squad must be in position to cover the assigned sector while the other squads move.

6. . The squad leader must personally reconnoiter all routes to alternate and supplementary positions. If needed, routes are improved to ensure ease of use.

a. . The routes into, out of, and between positions should offer cover and concealment and should avoid areas where the vehicles may raise dust. Routes should allow the squad to enter the firing position opposite the location of the enemy.

b. . When moving between positions, the platoon leader normally moves with one section of the platoon and the platoon sergeant with the other. Dispersion between vehicles and normal security measures are enforced.

7. .

a. When the TOW is assembled for ground emplacement, the tripod must be level to permit the effective operation of the weapon. If the tripod is not level, lateral (azimuth) movement of the traversing unit produces a change in the elevation angle of the launch tube. Therefore, acquiring and tracking the target may be difficult. An unlevel tripod can cause an electronic control error during the final tracking operation, while the command-link wire is guiding the missile to its target.

b. For ground emplacement, the proper adjustment of the tripod legs compensate for uneven ground up to a slope of 30-degrees. Therefore, the firing position must not slope more than 30-degrees. When the tripod legs are properly positioned, the bubble in each level will be between the marks on the level indicator. Do not fire from a position where the traversing unit has a lateral cant of more than 10-degrees. The ideal firing position is as level as possible. However,

the missile can be fired from a position where the tripod is canted as much as 30-degrees directly downhill or uphill.

c. Once the site has been selected and the weapon has been emplaced, the squad leader and the gunner make a range card for the position.

8. . Keep the following guidelines in mind when selecting a firing position—

a. . Alternate positions should be at least 300 meters from a primary position. This prevents the fires of an enemy artillery battery, firing on the primary position, from impacting on the alternate position. Terrain restrictions may prevent dispersion, but dispersion should always be a concern when selecting alternate positions.

b. . This long range gives the TOW an advantage at ranges greater than 1,500 meters since the TOW system can engage enemy tanks but be safe from return tank fire. This advantage is due to the **standoff** achieved when the weapon range is maximized.

(1) . This exploitation of the range optimizes the fires of the weapon and provides protection to the crew from return tank fire.

(2) . More than a 1,500-meter range can be gained by positioning the TOW to the flank, farther to the rear of the line of enemy contact, or farther from its sector of fire.

c. . Mutual support provides some protection for the TOW crew by ensuring continuous coverage of enemy armored vehicles. It consists of two parts—

(1) . Use the TOW section so that its fires interlock with and support each other or other antiarmor weapons. Both TOWs within the section should cover as much of the sector of fire as possible.

(2) . Try to position the TOWs within the section's sector of fire so that they can engage enemy armored vehicles assaulting other TOW positions.

d. . TOW crews by themselves are vulnerable to armor and to dismounted infantry attacks against their positions. Therefore, they should be integrated with nearby infantry whenever possible.

e. . Engage the enemy from the flank, keeping the following facts in mind:

(1) . A launcher so sited seldom lives long. This is particularly true at shorter ranges. When tanks are advancing, their firepower and observation are oriented to the front. This makes it difficult to detect and to retrace a missile launched from the flanks.

(2) . A trailing tank may see the launch signature or crew movement and destroy the weapon or stalk it from the rear. In addition to firing from the flank, the TOW must be sited so that it is in defilade from the direction of the enemy. This means that there must be something between the weapon and the tanks being fired at a parapet, wall, or natural cover. Flank concealment is necessary, but flank defilade, providing cover from fire, is preferred. Concealment of flash, not only from tanks but also from the enemy's observation posts (OPs), is also essential. A weapon seen is a weapon lost.

PART B

CONDUCT THE OCCUPATION OF A FIRING POSITION

1. . As it occupies a firing position, a unit should avoid detection. Careless occupation can compromise a well-concealed position. Rapid movement into firing positions should be avoided, especially in dusty areas or where vegetation may be disturbed.
 - a. . A position should be approached from the rear or flank as terrain-driving techniques are used. The vehicles should be stopped short of the position in a covered and concealed location. Then, section and squad leaders should dismount and move forward to reconnoiter the area. During the reconnaissance, they select exact firing positions, determine how to employ TOWs, and select a route into each position. Both the position and the route selected should limit observation.
 - b. . Once the leaders have completed their ground reconnaissance, they call the vehicles forward and guide them into position. Section and squad leaders may consider backing the vehicles into position. This permits rapid displacement from the position without moving toward the enemy or using time to turn around. Signs that could be detected by aerial observation, such as vehicle tracks, windshield reflections, and window reflections, must be eliminated.
 - c. . Platoons and sections must develop an SOP for the occupation of a firing position that includes the sequence of action and the priority of the work. This SOP ensures that all squad members know what is expected of them.
2. . To help the company use time effectively, the commander should establish work priorities. Normally, these are in the SOP, but they can be modified to fit the mission. In most situations, these priorities are as follows:
 - a. Establish security.
 - b. Position weapon systems.
 - c. Prepare range cards.
 - d. Prepare firing conditions.
 - e. Emplace obstacles.
 - f. Establish local communications.
 - g. Stockpile ammunition, food, and water.
 - h. Perform maintenance; rest.
 - i. coordinate between adjacent units.
3. . Observation posts should be established and local patrols conducted to search for enemy stay-behind forces, sensors, mines, or booby traps. Patrols should also reconnoiter any terrain that enemy

reconnaissance elements could use to call for and adjust indirect fire or to direct enemy maneuver units. Patrols are used to protect emplaced obstacles, to cover dead space between units, and to cover dismounted avenues of approach. The following guidelines apply to the establishment of security—

- a. . Emplace PEWS in dead space or between units to complement the efforts of patrols.
- b. . Position chemical detection alarms upwind from the platoon's position. Periodic checks and maintenance must be performed on the alarms. They must be moved if wind direction changes.
- c. . The platoon leader positions the improved TOW vehicles (ITVs) or TOW-mounted HMMWVs.

4. . Due to enemy vehicle design, which places the heaviest armor in the frontal 60-degree arc, friendly antiarmor units must try to engage these vehicles from the flank or the rear. Although the angle of engagement is important, targets normally are engaged as they appear. Therefore, leaders must position ITVs where flank engagements are most likely to occur. This means placing fighting positions to the flank of enemy avenues of approach.

a. . Defilade positions are classified as either turret-down or hull-down. A turret-down position uses terrain to mask the ITV, and only the 3X acquisition sight is exposed to the enemy. A hull-down position exposes only as much of the ITV as needed to engage targets.

(1) . Use a hide position when possible. Stay there until the enemy is where the unit plans to kill him. A prone or dug-in observer forward has a much smaller signature than an ITV.

(2) . Have a backdrop, but avoid anything that catches the eye. For example, an ITV positioned near a large boulder or other prominent terrain feature almost certainly will be detected.

(3) . Position to the flank of an enemy approach and behind frontal cover. An attacker can more easily acquire and kill targets to his front than to his flanks or rear.

(4) . Have covered routes into and out of firing positions. Put as much priority on covered routes as on the quality of firing positions. Weapons must be moved carefully to avoid diesel and dust signatures.

(5) . Maintain 300 meters or more between primary and alternate ITV positions. Also, the greater the dispersion (in width and in depth) between vehicles, the less the likelihood that they both will be suppressed and that the detection of one will lead to the detection of the other.

(6) . Berms must be more than 20 feet thick to be effective. Also, they enable the attacker to spot the position more easily.

(7) . Positions that expose weapons to large numbers of enemy systems should be avoided. If many enemy vehicles can detect and engage the defending weapon, that weapons chance of survival is reduced. The weapons should be hidden from most of the enemy formation but should be able to engage one or two of the enemy vehicles at a

time. The weapons systems crews must be able to shift their sectors of fire to engage other parts of the enemy's formation. To do this, the weapons are moved around small terrain features, as shown in [Figure 3-2](#). Such fields of fire can be a fire control measure, acting to limit multiple engagement of the same target.

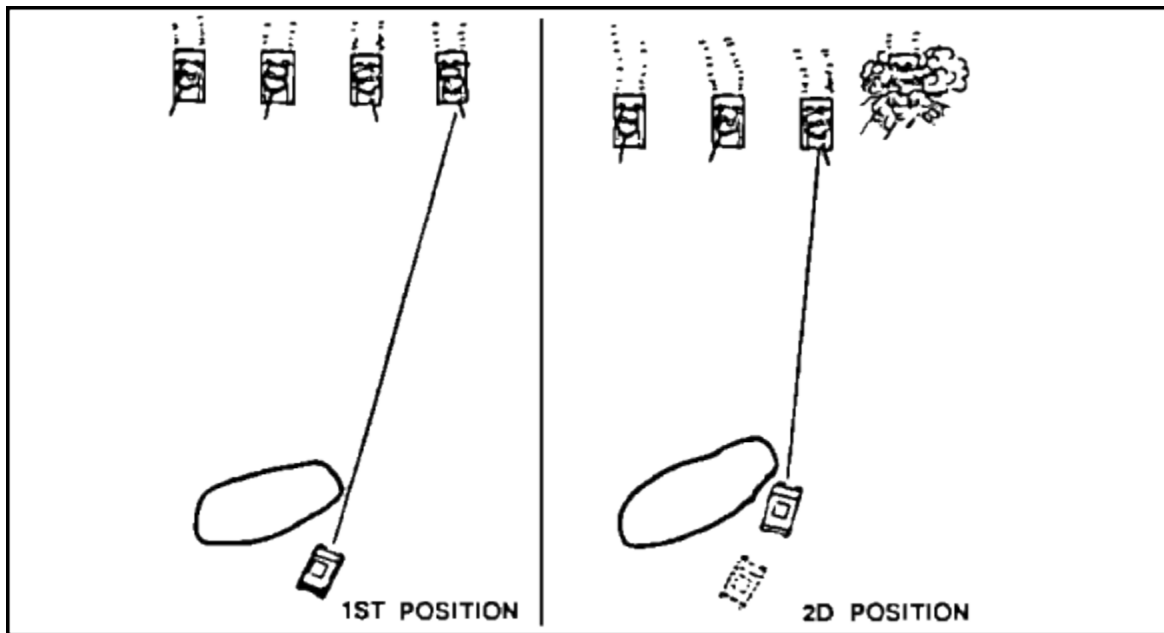


Figure 3-2. Hidden Position with Smaller Fields of Fire.

b. . Battlefield dust, smoke, fog, and darkness normally limit observation and fields of fire. When engagement ranges are reduced, flanking fires, the use of obstacles, and mutual support with infantry and covered and concealed positions increase in importance. Due to battlefield obscurity, weapons must be positioned to fight during limited visibility or to quickly move to limited visibility positions.

5. . Use the following guidelines in reconnoitering a firing position:

- a. . Stop the vehicle short of the area in a covered and concealed position, dismount, and reconnoiter the general area for the exact firing position.
- b. . This increases the flexibility of the squad by using the least amount of time displacing to new positions.
- c. . If the terrain prevents the vehicle from moving to the position or if the vehicle cannot be concealed, the TOW must be dismounted and carried to the firing position.

6. . Occupy a TOW position (such as the one shown in [Figure 3-3](#)) that—

- a. Allows for flank engagement.
- b. Offers concealment of the flash and the weapon's signature.
- c. Has the weapon in defilade from the direction of approaching enemy vehicles.
- d. Offers concealment to the front.

- e. Tries for a flank engagement (especially at ranges of 1,500 to 2,000 meters, where enemy tank guns have a good chance of a first-round hit). An advancing tank's firepower and observation are oriented to the front, making it hard to detect and retrace a TOW launched from its flank. Armor plating on the sides of a tank is thinner, so attacking a side helps ensure a kill.
- f. Conceals the flash and signature of the TOW, because a tank trailing the one that is fired upon may sight your launch signature and fire on your position.

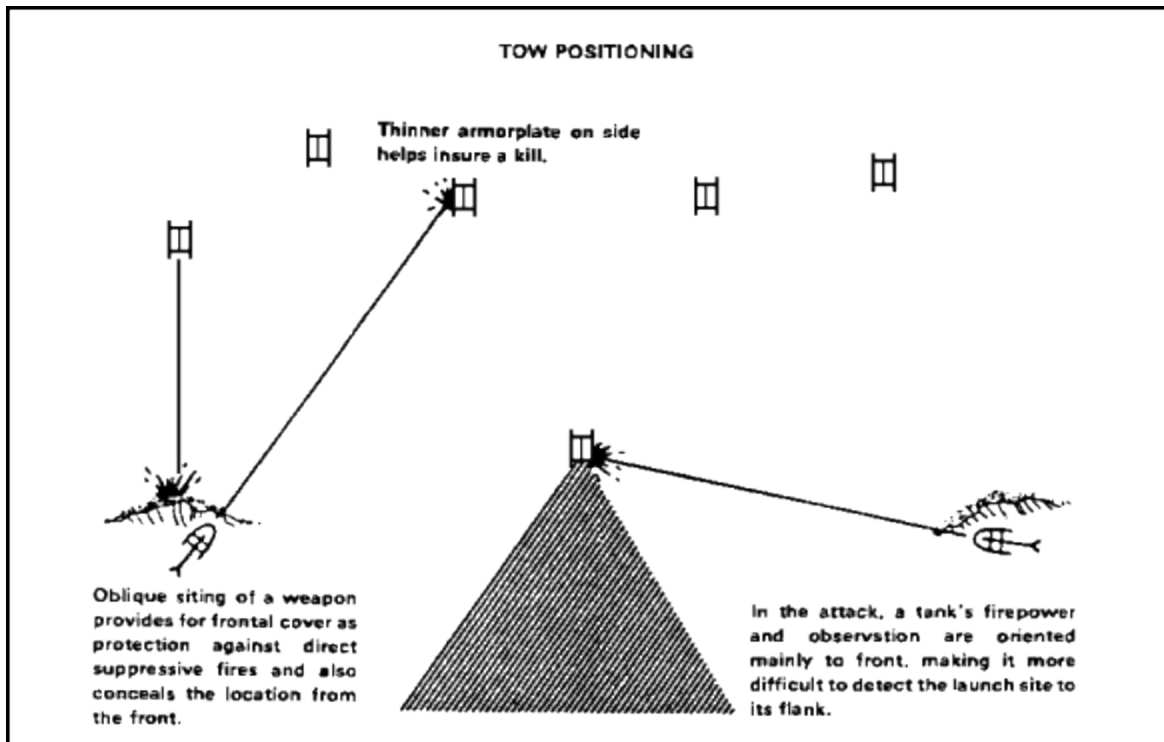


Figure 3-3. TOW Positioning.

- 7. . In occupying the position, observe the following rules:
 - a. . Covering the squad sector of fire allows you to see and engage targets while avoiding detection. The position selected should have the best shot into the assigned sector of fire (preferably a flank shot). If you have been assigned a sector of fire where there is no position available to see and engage targets, notify your section sergeant immediately. If you have dead space in your sector of fire, ensure that your section sergeant is aware of it. He can arrange the section to best cover the assigned section sector of fire and designate primary and alternate positions.
 - b. . All terrain has features that can help or hinder mission accomplishments with the TOW. Some terrain features increase chances for success and lessen the possibility of detection. These include
 - (1) The military crest of hills.
 - (2) The reverse slope of hills from which to fire at the rear or flank of enemy vehicles.
 - (3) The edge of a woodline.

c. .

- (1) Use the terrain to your advantage for cover from enemy fire and for concealment from enemy ground and aerial observation, as shown in [Figure 3-4](#).

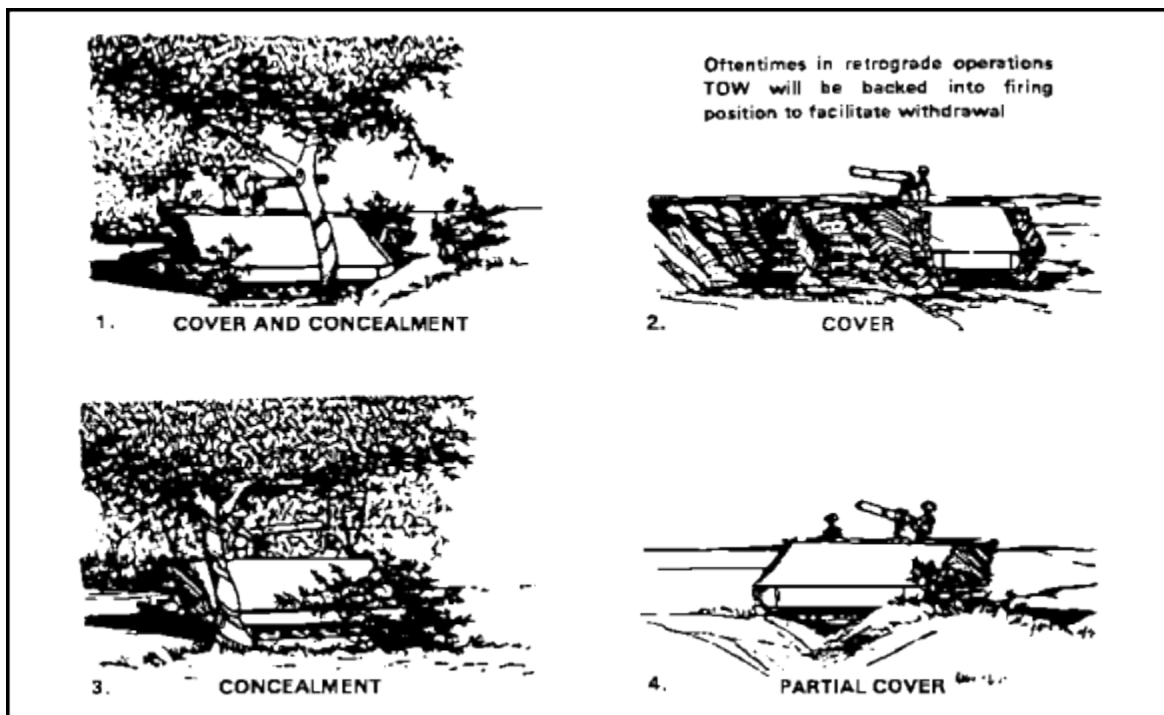


Figure 3-4. Covered and Concealed TOW Positions.

- (2) Since ideal cover and concealment will not always be available, priorities must be established. The terrain characteristics you must look for in selecting a position are (in the order of their preference)—

- (a) Cover and concealment.
- (b) Cover.

NOTE

Concealment of flash and signature is an overall essential factor.

- d. . When analyzing the terrain in your sector, consider the use of high ground. This can gain your crew protection and optimize TOW standoff. In [Figure 3-5](#), the TOW has been positioned far enough back on the high ground so that it can cover its sector of fire but be protected from tank fire that is closer than 1,500-meters because of dead space.

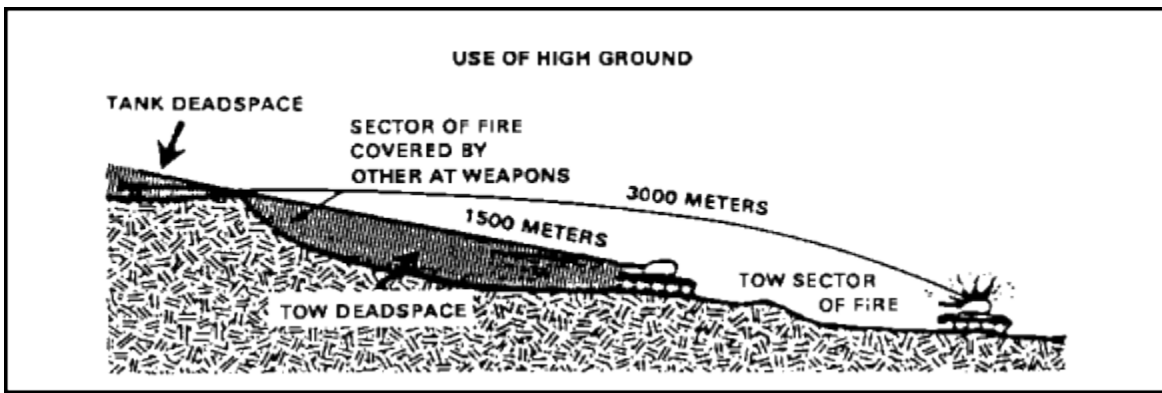


Figure 3-5. Use of High Ground.

e. . You may have to use shadows for concealment, as shown in [Figure 3-6](#). When this happens, vehicles must be moved as the shadows shift. If a vehicle is under a tree, and the shadows and foliage do not give enough concealment from the air, the vehicle should be camouflaged with branches.

NOTE

The range card must reflect the change in vehicle position because of the shift of the vehicle position when the shadows move.

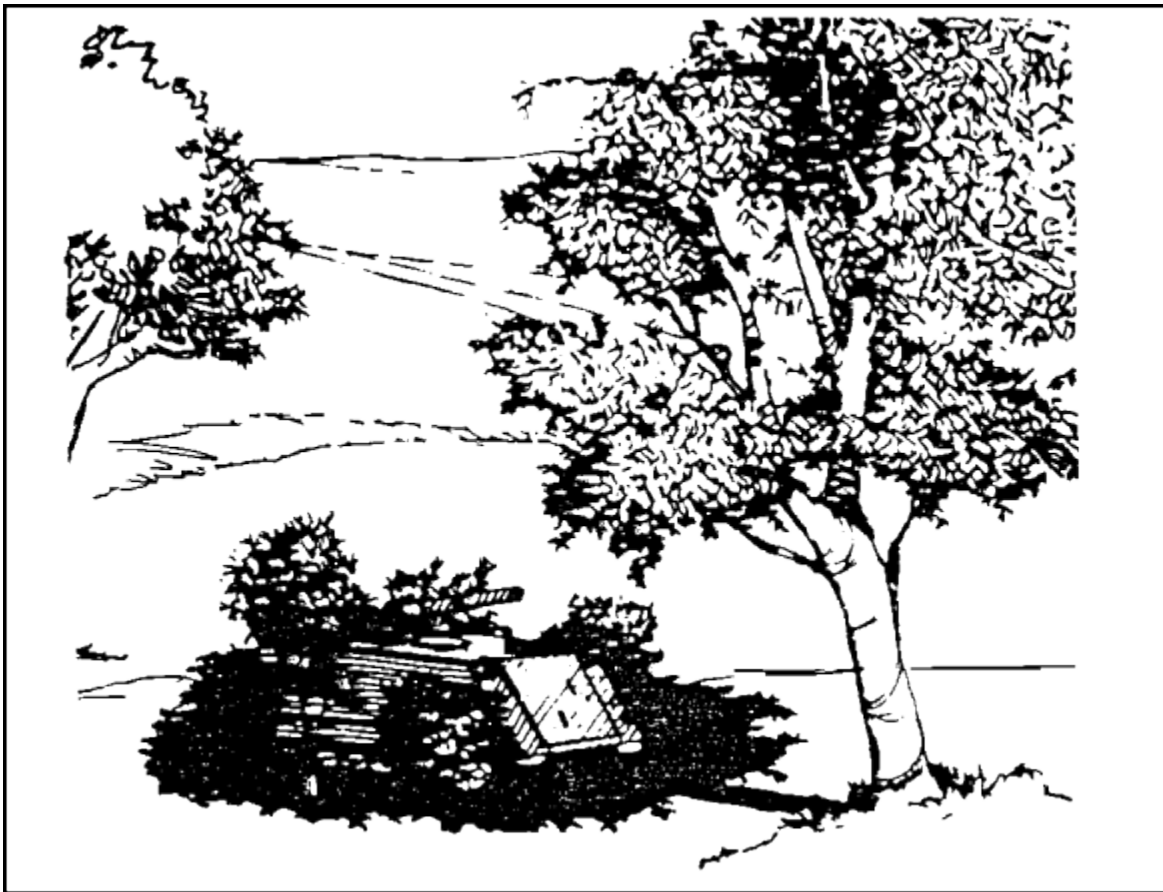


Figure 3-6. Use of Shadows.

- f. . Avoid road junctions, hilltops, a lone building or tree, and other obvious positions. These features attract the enemy's attention; his artillery will probably have registered on them.
- g. . Determine the exact location of the firing position, select a concealed route, call the vehicle forward, and guide it into position.

NOTE

You must have communication with the section leader or whoever is controlling your fire. Therefore, the position must allow for radio communication, wire communication, or visual communication. Preferably, the position will allow for a combination of these so that one can be a backup.

- h. . If there is no position within your sector that has natural concealment from ground or aerial observation or if you decide that it is not practical to camouflage the position with artificial materials, the TOW should be positioned in a nearby covered and concealed position—a hide position, such as the one shown in [Figure 3-7](#). The weapon should remain there until it must engage targets from its primary or supplementary firing positions. When the weapon is in a hide position, an observer from the squad remains at the firing position. When targets appear, he calls the TOW forward and points out the target to the gunner. The observer must have binoculars, and he must have communication with the crew. If the observer does not have visual contact with the crew, then a field telephone should be installed between them.

NOTE

When only one TA-312 or TA-1 is available, connect the WD-1 to your audio input on the AM1780/VRC. You may then communicate with the observer using your intercom.

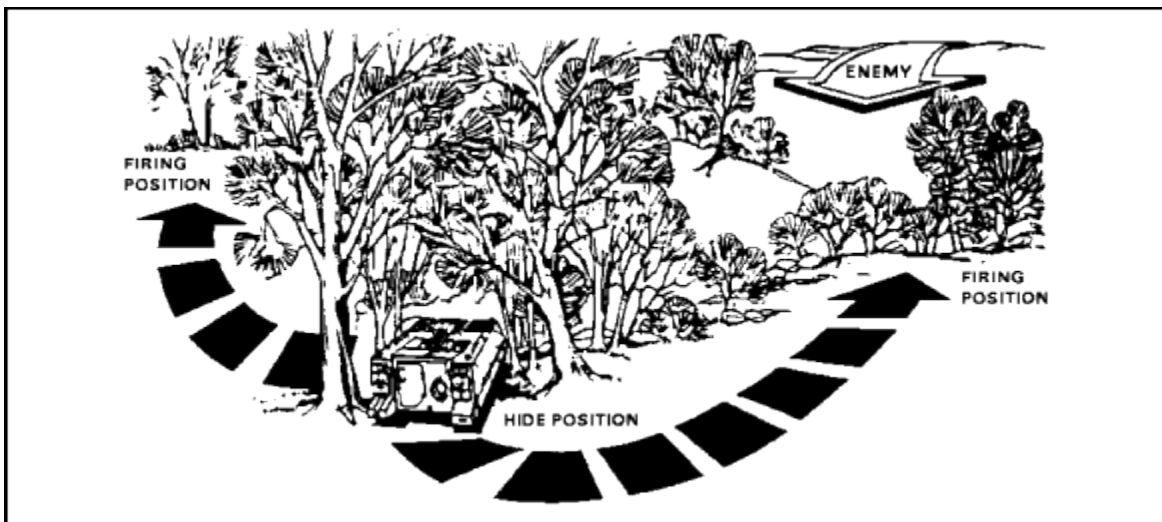


Figure 3-7. Hide Position.

Practice Exercise

Lesson 3

Instructions The following items will test your understanding of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers with the answer key that follows. If you answer any item incorrectly, review that part of the lesson which contains the portion involved.

Situation for Questions 1 through 4:

You are the leader of a TOW squad. You have selected a primary firing position.

1. You integrate with nearby infantry for security against attacks by enemy—
 - ☐ A. armor and dismounted infantry.
 - ☐ B. artillery and armor.
 - ☐ C. artillery and dismounted infantry.
 - ☐ D. aircraft.
2. You instruct the members of your crew to approach the firing position, as terrain-driving techniques are used, only from the
 - ☐ A. front.
 - ☐ B. rear.
 - ☐ C. front or flank.
 - ☐ D. rear or flank.
3. You refer to your unit's standing operating procedure (SOP) to determine which work priority to assign to the preparation of range cards. According to the SOP, this action is to have which priority?
 - ☐ A. First.
 - ☐ B. Second.
 - ☐ C. Third.
 - ☐ D. Fourth.

4. Later, you use a hide position. You instruct an observer from the squad to remain at the firing position. He has visual contact with the crew, and you ensure that he has communication with the crew and is equipped with—
- ☐ A. night vision devices.
 - ☐ B. binoculars.
 - ☐ C. food, water, and other necessary supplies.
 - ☐ D. camouflage materials.

PRACTICE EXERCISE ANSWERS

Situation for Questions 1 through 4:

You are the leader of a TOW squad. You have selected a primary firing position.

1. You integrate with nearby infantry for security against attacks by enemy—
 - a. armor and dismounted infantry.
 - b. artillery and armor.
 - c. artillery and dismounted infantry.
 - d. aircraft.
2. You instruct the members of your crew to approach the firing position, as terrain-driving techniques are used, only from the
 - a. front.
 - b. rear.
 - c. front or flank.
 - d. rear or flank.
3. You refer to your unit's standing operating procedure (SOP) to determine which work priority to assign to the preparation of range cards. According to the SOP, this action is to have which priority?
 - a. First.
 - b. Second.
 - c. Third.
 - d. Fourth.
4. Later, you use a hide position. You instruct an observer from the squad to remain at the firing position. He has visual contact with the crew, and you ensure that he has communication with the crew and is equipped with—
 - a. night vision devices.
 - b. binoculars.
 - c. food, water, and other necessary supplies.
 - d. camouflage materials.